

FM 21-20

DEPARTMENT OF THE ARMY FIELD MANUAL

U.S. Army Military History Institute
Carlisle Barracks, Pa. 17013

PHYSICAL TRAINING



HEADQUARTERS, DEPARTMENT OF THE ARMY
OCTOBER 1957

AGO 1669C—Sept

FIELD MANUAL } HEADQUARTERS,
No. 21-20 } DEPARTMENT OF THE ARMY
WASHINGTON 25, D. C., 8 October 1957

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CHAPTER 1

INTRODUCTION

Section I. ORGANIZATION AND RESPONSIBILITY FOR THE PROGRAM

1. Purpose and Scope

a. This manual is a guide for commanders and staff officers in planning, preparing, supervising, and inspecting physical training programs. It provides sufficient information to prepare and supervise a physical training program for any phase of military training. It includes a testing program for all age groups and information for in-service training of instructors.

b. This manual should be used in conjunction with TM 21-200.

2. Areas of Responsibility in Physical Training

There are two general areas of responsibility in the physical training program. The first is a function of the higher commander and takes the form of command emphasis, support, planning, and supervision. The second is on the lower level, where the company commander and platoon leaders carry out the execution of the program. No program can be successful unless both areas of responsibility are administered properly. Since physical training is a command responsibility, no commander in the chain of command can delegate his responsibility

to another. Each is responsible for the implementation and proper performance of the prescribed program.

3. Division and Regulation of the Physical Training Program

The physical training program is divided to correspond to duty assignment. These divisions are individual training, unit training, and specialist and staff personnel training. The regulation of training within each of these divisions is based on three stages of conditioning—the toughening stage, the slow improvement stage, and the sustaining stage. Physiological reasons for regulation of the program and a discussion of the physiology of exercise are contained in chapter 3.

Section II. PHYSICAL FITNESS

4. Total Military Fitness

Total fitness for combat includes technical fitness, mental and emotional fitness, and physical fitness. If any of these attributes are lacking, combat effectiveness suffers proportionately. Without technical fitness, a soldier lacks the knowledge and skill to fight; without mental and emotional fitness, he lacks the incentive and will to fight; without physical fitness, he lacks the strength and endurance to fight.

5. Importance of Physical Fitness

The necessity for keeping physically fit has been lessened by labor-saving technological advancements. In combat, however, the soldier has few

conveniences and must accomplish his mission under strenuous physical conditions. It is therefore imperative that all soldiers maintain a high level of physical fitness. Not only will they be better able to meet the demands of combat, but will be more efficient in carrying out daily routine assignments.

a. Improves Sense of Well-Being. The physically fit individual enjoys a feeling of well-being and confidence in his ability to meet any emergency.

b. Improves Appearance. Physical conditioning tends to harden the muscles, eliminate fat, and improve the muscle tone. This results in better posture and an improved soldierly appearance.

c. Improves Ability to Accomplish Mission. The well-conditioned soldier is able to march long distances through rugged country with a full pack, weapon, and ammunition. He is physically able to drive fast-moving tanks and trucks over rough terrain; make assaults after running and crawling long distances; jump into and out of foxholes and over obstacles; lift and carry heavy objects; and keep going for many hours without sleep or rest. He has the strength and determination to avoid capture and, if captured, to resist efforts to break his will and lessen his desire for escape. He is physically capable of exploiting any opportunity to escape and, after escaping, of enduring severe hardship until he can make his way to friendly lines.

d. Improves Emotional State. There is a close relationship between physical fitness and mental and emotional fitness, or morale. Fatigue, weakness, and physical exhaustion are usually associated with low

morale. The rugged, tough, well-conditioned soldier has a feeling of fitness and confidence and is much less susceptible to many of the factors and attitudes that undermine morale.

6. Importance of Proper Concept of Physical Fitness

a. A proper understanding of physical fitness is necessary to direct the physical training program toward the total conditioning of all soldiers. Since physical fitness includes strength, endurance, agility, and coordination, no single activity is sufficient for its full development. Marching, for example, is a splendid conditioning activity, but it alone cannot properly condition troops. It does not adequately develop abdominal and arm and shoulder girdle strength, agility, coordination, or the type of endurance needed in running. The development of physical fitness requires a planned, progressive program of physical conditioning exercises supplemented by vigorous, sustaining, type athletic activities.

b. The quality of a unit is determined by the overall physical condition and total military fitness of all its members. It is more important for all men in the unit to receive the benefits of a balanced and well-directed program of physical training than for a few members to achieve record performances.

7. History of Army Physical Training

a. *Early Army Program.*

- (1) Every war has revealed the physical deficiencies of our men of draft age. This realization by the Army and civilian per-

sonnel following the War between the States, and the pressure exerted by them, resulted in the employment of Herman J. Koehler at the United States Military Academy to handle the physical training of cadets. A new era began with the introduction of Koehler to Army physical training.

- (2) A well-trained and outstanding leader, Koehler was a success from the day he arrived at West Point. Practically every phase of Army physical training until World War I was his personal endeavor.

b. World War I.

- (1) Despite Koehler's intensive effort to influence physical training throughout the Army, World War I found the Army poorly prepared for conditioning men for war. The small peacetime army was, as usual, faced with the task of preparing millions overnight to fight a new type of warfare.
- (2) The concept of competitive athletics as a supplement to the conditioning of soldiers was put into effect. Officers had previously viewed athletics as purely recreational. The idea of conditioning entire units by mass games was unheard of until this time. The quality and quantity of physical training instruction, however, left much to be desired.

c. World War II.

- (1) World War II again forced America to

realize that she was no longer a nation of physically rugged individuals. Again we "viewed with alarm" as the draft statistics were inspected. Leisure living and the fact that we had become a nation of spectators instead of participants were blamed for the same conditions that had been recognized at the outbreak of every other war.

- (2) There was no lack of public exhortation by leaders in the war effort. Slogans such as, "the more sweat, the less blood" appeared everywhere in the training camps. Toughness in training progressed well ahead of the physical training manual, which was based on the idea of formal calisthenics as practiced after World War I. Commanders resorted to a variety of stiff obstacle courses in order to supplement the existing calisthenics. The improvised activities were effective, but in inexperienced hands they often proved dangerous tools.
- (3) The Army called on military and civilian specialists to aid in the formulation of a modern program, and their answer to the need for more vigorous conditioning exercises was the dissemination of a program in the form of a new training circular. This training circular represented the first change in physical training doctrine that could be scientifically justified by testing procedure. As the war progressed, several

extensive manuals were published to cover the field of physical training and athletics.

d. New Physical Training Concept.

- (1) The immediate postwar period was one of consolidation as far as Army physical training and athletics were concerned. Hours allotted for physical training in the schedule were increased and athletic sports were substituted for conditioning activities, to a considerable degree. The company commander was and still is designated as being responsible not only for the conditioning of his unit but also the promotion of intramural athletics in his unit. Promotion of competitive sports of larger units remained the province of the special service personnel. As in past instances, oftentimes the conditioning phase of the program was looked upon as a war-time tool and was relegated to a place of secondary importance.
- (2) In 1950 the United States was called to arms to help the United Nations quell a threat to world peace. As the reports came back from Korea, an alarming number of casualties were attributed to the inability of the U. S. soldiers to physically withstand the rigors of combat over rugged terrain and under unfavorable climatic conditions. These reports again forced attention to the need for a vigorous and continuous physical training program.

- (3) Over a period of years and the course of several wars, the costly lessons learned from our past military experiences have led to an increasing interest in the physical condition of the fighting man. With this interest has come the ever increasing realization that our troops must be well conditioned, before all else, in this atomic age. No longer can we afford emphasis on physical fitness during wartime and deemphasis during time of peace. It is evident that, in spite of increased mechanization and atomic weapons, physical training retains a vital place in the life of the individual soldier.

CHAPTER 2

BODY STRUCTURE

Section I. INTRODUCTION

8. Knowledge of the Human Body

The human body, like weapons and machines, must be understood before proper techniques and care can be employed in conditioning it. If the personnel directing the physical training program do not understand the structure and functioning of the human body, they may fail to condition their troops properly for vigorous physical action. This chapter and chapter 3 provide information concerning the priceless machine with which we work—the human body.

9. Importance of Body Structure

a. With an understanding of the basic physiological processes of the body, commanders and physical training supervisors (par. 84) can develop an effective program of physical training. A program with such a solid foundation eliminates certain fads designed as short cuts to physical conditioning.

b. This chapter provides sufficient information on anatomy to support the discussion of body functioning in chapter 3, and the discussion of posture training found in TM 21-200.

10. Systems of the Body

The systems of the body include the skeletal, muscular, circulatory, respiratory, digestive, genitourinary, and nervous systems. All the systems must work in cooperation with one another to insure a sound body. For physical training purposes, however, it is not necessary to consider all systems.

11. Definitions

A thorough understanding of the following terms should precede the study of the bones and muscles.

a. Anatomy. Anatomy is the study of body structure. Such study concerns the size, shape, location, and composition of bones, muscles, and organs.

b. Anatomical Position. In the study of body structure the body is always assumed to be in an upright position with the arms at the sides, palms forward.

c. Median Plane. An imaginary plane running through the body from the front to the rear, dividing the body into equal right and left halves.

d. Medial. When this term is used in reference to a body part, it indicates that the part is nearer the median plane than some other body part.

e. Lateral. Lateral means toward the side and farther from the median plane.

f. Superior. Superior is used in the definition of a body part that is higher or near the head.

g. Inferior. This term indicates that the body part is lower or farther from the head end of the body.

Section II. THE SKELETON

12. General

The skeleton is composed of about 206 bones. Bones are of four types: flat bones, as the breast bone; long bones, as in the legs; short bones, as found across the arch of the foot; and irregular bones, as in the spinal column. Bones manufacture in the marrow red blood cells for the body. They also furnish support for the attachment of muscles and protection for the vital organs, such as the brain, lungs, and heart. In general, bones may be classified according to their location.

13. Bones of the Skeleton

(figs. 1 and 2)

Both sides of the skelton must be examined to view all the major bones. The front view is shown in figure 1 and the rear view in figure 2.

a. Head. The skull is composed of 22 separate bones. These bones are fused together, or attached, and provide protection for the brain and give shape to the face.

b. Shoulder Girdle. The following bones form the shoulders and provide a place of attachment for the arms:

- (1) *Clavicle (collar bone).* A long bone, one on each side, connecting the shoulder and breast bone.
- (2) *Scapula (shoulder blade).* A broad, flat bone with a raised ridge extending laterally across the superior part of the bone.

c. *Arm Bones.* The following are the major bones of the arm:

- (1) *Humerus.* Upper arm bone.
- (2) *Radius.* A long bone in the forearm on the thumb side.
- (3) *Ulna.* A long bone in the forearm on the little finger side.

d. *Rib Cage.* The rib cage protects the spinal cord, lungs, and heart and is formed by the following bones:

- (1) *Spinal column.* About 29 to 32 irregular bones divided into cervical, thoracic, lumbar, and sacral regions.
- (2) *Sternum (breast bone).* A flat bone forming the center portion of the rib cage.
- (3) *Costae (ribs).* Twenty-four long bones joining the spinal column and sternum.

e. *Hips.* The hips protect the organs of the lower abdomen and provide a place of attachment for the legs. They are formed by the lower portion of the spinal column and the bones of the pelvis. The pelvis is a bony structure consisting of 11 bones, all fused together to form the complete unit. These bones are the pelvic girdle (hip bones), one on either side, each consisting of three bones which fuse together during early life into one bone, and the sacrum.

f. *The Leg Bones.* The following are the major bones of the leg:

- (1) *Femur.* A long bone in the thigh, attaching the leg to the pelvis.

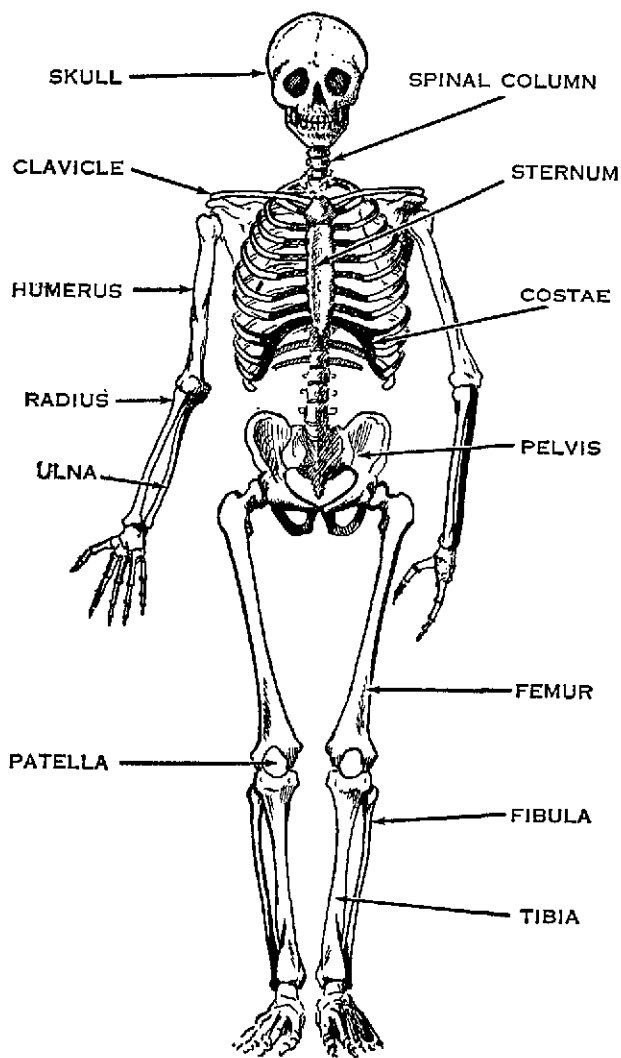


Figure 1. Front view of skeleton.

- (2) *Patella*. A flat bone forming the knee cap.
- (3) *Fibula*. A long bone on the lateral side of the leg.
- (4) *Tibia*. A long bone on the medial side of the leg.

g. Spinal Column (fig. 2). The spinal column is divided into five areas and the vertebrae are named according to area. References to these areas are frequent in posture training.

- (1) *Cervical vertebrae*. Seven vertebrae that form the neck.
- (2) *Thoracic vertebrae*. Twelve vertebrae to which the ribs attach, forming the rear of the rib cage.
- (3) *Lumbar vertebrae*. Five vertebrae in the area between the rib cage and the hips.
- (4) *Sacrum*. Five vertebrae fused together, forming the rear portion of the pelvis.
- (5) *Coccyx*. Small vertebrae on the end of the sacrum, usually fused together. The number of these bones varies depending upon the individual.

h. Heel Bone. The calcaneus (heel bone) is a short bone that forms the heel. It serves as a place of attachment for the muscle in the calf of the lower leg.

14. Characteristics of Bones

Bones of the skeleton have definite characteristics, with ridges, projections or depressions appearing on most of them. These areas have the primary pur-

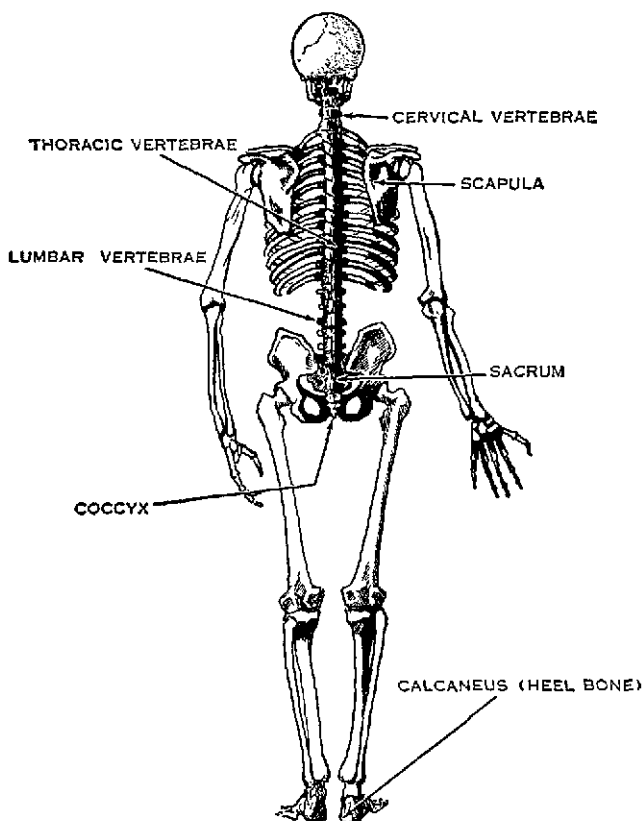


Figure 2. Rear view of skeleton.

pose of providing a place for the attachment of muscles.

15. Cartilage and Ligaments

The joints in the body are connected and supported by cartilage and ligaments.

a. Cartilage is a tough, elastic, translucent tissue that acts as a shock absorber or buffer between bones. Examples are the discs between the vertebrae, the connector tissue attaching the ribs to the sternum, the buffers in the knee joints, and the cartilage around certain joints to deepen sockets.

b. Ligaments are connective tissue that bind bones together; they are extensible but not elastic. Because of this characteristic, major sprains are serious as the ligaments never quite return to their former position.

16. Joints

A joint is a place of union, usually more or less movable, between two or more bones. Joints, because of their movement (or lack of movement in some cases), are divided into three classes—inmovable, slightly movable, and freely movable.

a. The immovable joint has no joint cavity. Examples of this type of joint are the bones of the head and face.

b. The slightly movable joint provides very limited movement. Examples of this type of joint are the vertebrae and sternum.

c. The freely movable joint permits maximum movement. The bones forming a joint of this type are held in place by ligaments. Freely movable joints are of greater importance in physical training because they are affected by exercise. The main effect is to increase their mobility and stability with a combined increase of muscle power and control. Types and examples of movable joints are—

- (1) Rotary (radius and ulna in rotation of the forearm).
- (2) Hinge (ankle and elbow joints).
- (3) Ball and socket (hip and shoulder joints).

Section III. THE MUSCLES

17. General

Muscles are of three classifications—involuntary, voluntary, and cardiac. Involuntary muscles are those over which we have no control. Voluntary muscles are the larger skeletal muscles which are under control of the individual. Cardiac muscle is found only in the heart and for all practical purposes is an involuntary muscle. For physical training purposes, with the exception of the heart, voluntary muscles are the most important group.

18. Muscle Structure

a. The unit of structure of the muscle is the cell. These microscopic bodies are grouped in small bundles of fibers, which in turn are grouped into larger bundles until finally the entire muscle is formed. These bundles of fibers are held in place by sarcolemma, a thin, sheath-like material that surrounds the muscle bundles and secretes a fluid that lubricates the muscle tissue. The fused ends of the sarcolemma form the tendons which attach the muscles to the bones.

b. Muscles are formed in layers to do particular jobs—some are flat, some are round, some are large, and others small. Some are superficial, lying just

under the skin, while others are located under the superficial muscles and are known as deep muscles.

19. Attachment of Muscles

The arrangement of muscles on the skeleton provides the proper angle of pull to make movement possible. Voluntary muscles are usually attached to the skeleton in two places. One end of the muscle is known as the origin and the other end as the insertion, to indicate the place where the muscle ends or inserts on the bone.

20. Action of Muscles

a. To produce motion and to do work, a muscle usually shortens its fibers. The movement may be flexion such as bending the arm at the elbow, or flexion of the trunk in attempting to touch the floor with the hands while keeping the legs straight. The movement of body parts may also take the form of extension. An example of extension is the act of straightening the arm or the movement of the leg in kicking a football. Some muscles raise the arms or legs, others depress or pull the raised limb down. Some muscles have the primary function of rotating the trunk from side to side, and still others cause the trunk to bend forward (flexion). Muscles act as stabilizers as well as prime movers.

b. In this section, the muscles are grouped according to the action they produce and by their location. The discussion is limited to the major muscle groups; no attempt is made to consider many smaller muscles. In the following explanation of muscles the name, general location, origin, insertion, and action is described.

21. Muscles of the Trunk

(figs. 3 and 4)

a. Muscles Causing Neck and Shoulder Action.

- (1) *Sterno-mastoid*—the important muscle on the front portion of the neck. This muscle runs from the sternum upward to the mastoid process behind the ear. The action of a single sterno-mastoid muscle turns the head toward the opposite side and elevates the chin. Both sterno-mastoid muscles, acting together, move the head forward.
- (2) *Trapezius*—a large triangular shaped muscle on the upper back and neck. It originates on the base of the skull, the ligaments of the neck, and all 12 thoracic vertebrae. It inserts along the ridge of the scapula and over the shoulder on the clavicle. This muscle pulls the head back, holds the shoulders back, and supports weight when carried on the shoulders.
- (3) *Levator scapulae*—a deep muscle lying beneath the trapezius that helps to form the rear portion of the neck. Its origin is the top four vertebrae of the neck and it inserts on the upper angle of the scapula. Its primary function is to lift the shoulder.
- (4) *Pectoralis minor*—a flat, triangular shaped deep muscle of the chest region. Its origin is on the 2d, 3d, 4th, and 5th ribs. The muscle reaches up to the point of the shoulder where it inserts on a pro-

jection of the scapula. The action of this muscle pulls the shoulder downward and forward.

- (5) *Serratus anterior*—a large, flat, deep muscle reaching from the chest around under the armpit and under the scapula. It originates on the top nine ribs and inserts on the medial, or inner border of the entire scapula. This muscle pulls the shoulders forward in such movements as push-ups.
- (6) *The rhomboids*—two deep muscles (minor and major) located on the upper back. They originate on the last cervical (neck) and first five thoracic vertebrae. They insert on the medial border of the scapula. These muscles hold the scapula in position and pull the shoulders upward and back.

b. *Muscles Responsible for Arm Action* (figs. 3 and 4). Several muscles located on the shoulders, trunk, and arms cause movement of the arms.

- (1) *Deltoid*—a triangular shaped muscle located on the shoulder and upper arm. The front portion of the deltoid originates on the clavicle and the rear portion on the scapula. It inserts on the outer surface of the humerus just above its middle. This muscle lifts the arm forward, sideward, and to the rear.
- (2) *Teres major*—a deep muscle on the back stretching from the scapula to the humerus. It originates on the lower portion of the

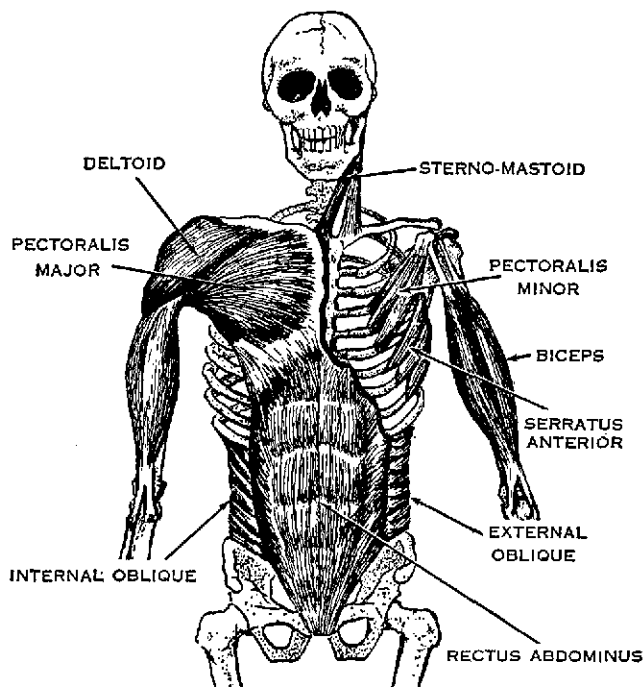


Figure 3. Anterior muscles of the trunk.

scapula and inserts on the humerus at a spot about one-third of the distance from the top. This muscle depresses or pulls the arm downward.

- (3) *Pectoralis major*—a superficial muscle of the chest region. It is fan shaped, originating on the medial end of the clavicle and the top six ribs and inserting on the humerus. This muscle pulls the arm

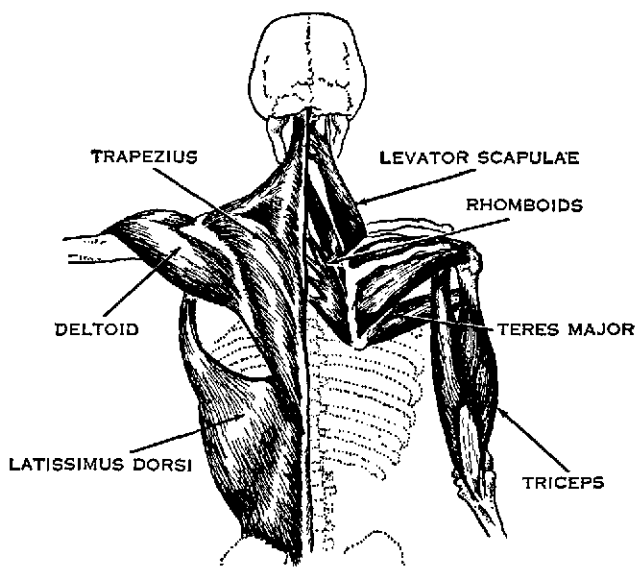


Figure 4. Posterior muscles of the trunk.

across the chest and is used forcibly in push-ups. It is commonly referred to as the hugging muscle.

- (4) *Biceps*—a muscle located on the front portion of the upper arm and having two separate origins (two tendons that fuse together to form the body of the muscle). These two heads originate on the scapula and the muscle covers the upper arm to insert on the radius in the lower arm. The action of this muscle is to flex the arm. It is used forcibly in such movements as pull-ups.

- (5) *Triceps*—a muscle located on the rear portion of the upper arm and having three separate origins (three tendons that fuse together to form the body of the muscle). Two of the heads originate on the upper part of the humerus and the other on the scapula just below the socket where the humerus joins the scapula. It inserts on the upper part of the ulna. The action of this muscle is to extend the arm at the elbow. It is used in such movements as push-ups, throwing, shot putting and other similar movements.
- (6) *Latissimus dorsi*—a flat, triangular shaped muscle located on the lower back. It originates on the lower six thoracic vertebrae, all lumbar vertebrae, and back of the sacrum, and the rear portion of the top of the hip bone. From this broad base the muscle tapers to a point that inserts on the upper part of the humerus. This muscle is used in doing pull-ups, rope climbing, and in striking movements. It is commonly referred to as the striking muscle.

c. *Muscles Responsible for Trunk Action* (fig. 3). Three of the major muscles of the trunk that produce movement just above the hips are of interest in the physical training program.

- (1) *Rectus abdominis*. This large muscle is located on the front portion of the belly wall. It originates on the pubic arch at the bottom of the pelvis, runs upward over

the abdominal area and inserts on the sternum and the 5th, 6th, 7th, and 8th ribs. This muscle retracts the belly wall and tilts the pelvis upward in front. It also aids in flexing the trunk. The rectus abdominis is one of the most important muscles from a postural standpoint.

(2) *External oblique*. This big muscle makes up the side and external portion of the abdominal region. It originates on the lower eight ribs and runs diagonally downward to insert on the crest and front part of the hip bone and into the linea alba (a tendinous line running down the front of the abdomen between the right and left recti abdominis). This muscle flexes and rotates the trunk.

(3) *Internal oblique*. This muscle is a deep muscle that lies beneath the external oblique. It originates at the pelvis on the front two-thirds of the crest of the hip bone. It runs diagonally upward and inserts on the 8th, 9th, and 10th ribs. The internal oblique muscles flex the trunk and rotate it to the right and left.

22. Muscles of the Pelvic Region

(fig. 5)

Two muscles of the pelvic region are concerned with flexing the legs at the hip.

a. Iliacus. The iliacus originates from the inner surface of the hip bone. It inserts on the inside of the femur just below the ball and socket joint. Its

primary function is to flex the thigh through the hip joint.

b. The Psoas Major. The psoas major is a muscle attaching the spine and leg. It originates on the last thoracic and all lumbar vertebrae. It inserts on the inside of the femur just below the ball and socket joint. The psoas major works with the iliacus in flexing the thigh through the hip joint. It is used in exercises such as kicking, running, sit-ups, etc.

23. Anterior Muscles of the Thigh

(fig. 5)

The muscles located on the front and rear of the thigh cross two joints, the thigh and the knee. In general, when they contract they extend one joint and flex the other. For example, in a kicking movement the leg must bend (flex) at the hip and straighten (extend) at the knee. Muscles located on the front of the thigh region are the—

a. Sartorius. The sartorius is a long, rope-like muscle that stretches across the thigh from the outside of the hip to the inside of the knee. It originates on the forward part of the hip bone and inserts on the medial side of the tibia. This muscle assists in keeping the knee in the median plane while running, and in flexing the knee.

b. Quadriceps Femoris. The quadriceps femoris is a four-headed group of muscles located on the front of the thigh region. The tendons of these four muscles fuse, continue over the patella, and insert on the tuberosity of the tibia. These muscles extend the leg at the knee and, as a secondary mission, flex

the hip. They are used in walking, jumping, running, kicking, climbing, etc. The four muscles are the—

- (1) *Vastus lateralis*. This muscle is on the outside of the thigh and originates on the upper part of the femur (thigh bone) and inserts on the patella (knee cap).
- (2) *Rectus femoris*. The rectus femoris is the center muscle of this group. It originates on the front lower part of the ilium (top bone of the pelvis). It inserts on the upper part of the patella.
- (3) *Vastus medialis*. The vastus medialis is a muscle lying on the inside of the thigh. It is partly hidden by the rectus femoris. It originates on the whole medial side of the femur. It inserts on the inner top part of the patella.
- (4) *Vastus intermedius*. The vastus intermedius is a deep muscle lying directly beneath the rectus femoris and due to this position is completely covered, therefore it is not illustrated in figure 5. It originates on the whole front aspect of the femur and inserts on the top back portion of the patella.

24. Posterior Muscles of the Thigh (fig. 6)

The muscles responsible for flexing the knee and extending the hip are located on the rear of the thigh. They are the—

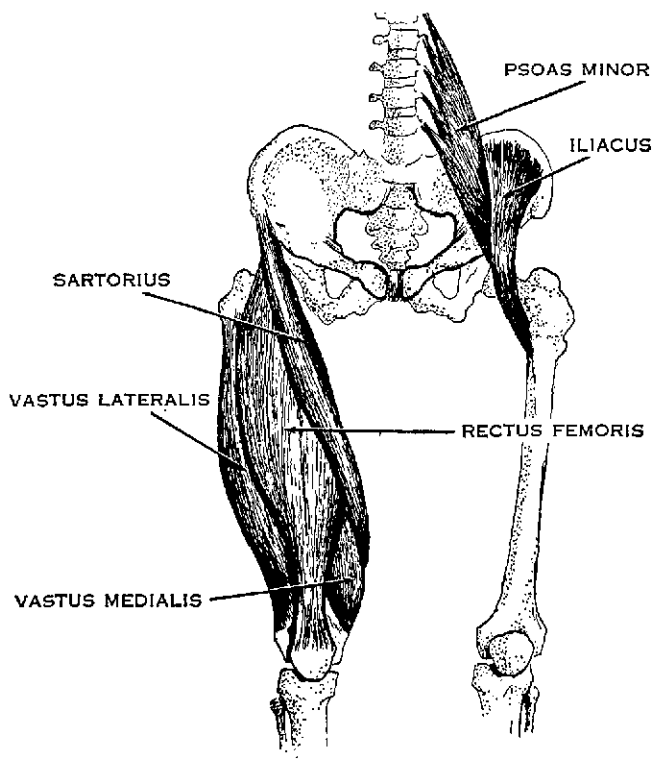


Figure 5. Anterior muscles of the pelvis and thigh.

a. Gluteus Maximus. This muscle originates on the rear crest of the hip bone and rear surface of the sacrum. It inserts on a rough ridge along the rear of the femur, just below the joint. The gluteus maximus is used in all extensions of the upper leg from the trunk. It is used most forcibly in such

exercises as jumping, sprinting, climbing, and lifting.

b. *Hamstrings*. The hamstring group consists of three muscles located on the rear of the thigh region which attach the tibia and fibula bones of the lower leg to the femur and pelvis. The primary action of this muscle group is to flex the knee. Its secondary mission is to extend the hip. The hamstrings are used in such exercises as walking, running, jumping, and rowing exercise. The three muscles of this group are the—

- (1) *Semitendinosus*. This muscle originates on the ischium (center) bone of the pelvic girdle and inserts on the front of the tibia. Its primary function is to flex the leg on the thigh. It also acts to extend the thigh at the hip.
- (2) *Semimembranosus*. This muscle also originates on the ischium and inserts on the rear inner surface of the tibia. While its primary function is to flex the leg and rotate it inward, it also extends the thigh at the hip upon contraction.
- (3) *Biceps femoris*. The biceps femoris is the most important hamstring muscle from a physical training standpoint. It originates on the ischium and the rear surface of the femur and inserts in the head of the fibula. The primary function of this muscle is to flex the knee and rotate it outward. It also extends the thigh at the hip if the leg is kept stiff.

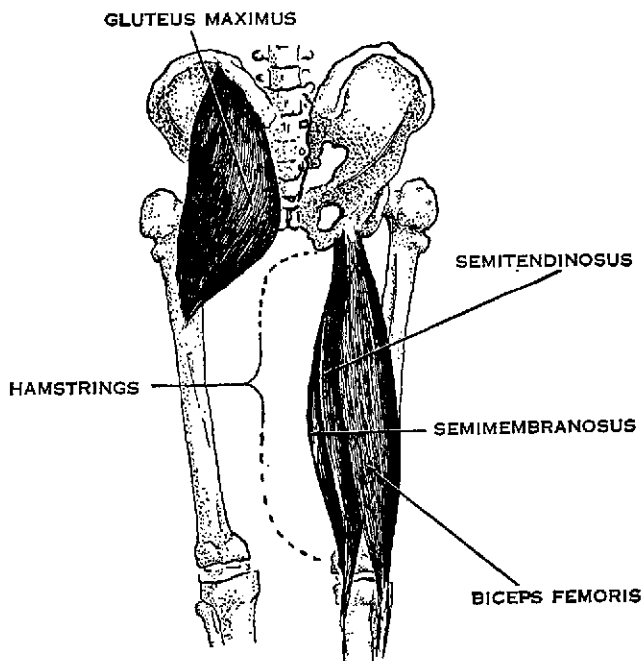


Figure 6. Posterior muscles of the pelvis and thigh.

25. Muscles of the Lower Leg (fig. 7)

These muscles are located on the front and rear of the lower leg and their action is to flex and extend the foot at the ankle.

a. Anterior Tibialis. The anterior tibialis is responsible for flexing the foot. It originates on the upper two-thirds of the outer surface of the tibia and inserts on the first metatarsal bone in the foot.

b. Gastrocnemius and Soleus. The gastrocnemius

is commonly referred to as the calf muscle and with the soleus, is responsible for extending the foot at the ankle. It originates on the lower end of the femur and inserts on the heel bone. It is used forcibly in running, starting, jumping, and charging in football. The soleus originates on the upper two-thirds of the tibia and inserts on the heel bone. It works with the gastrocnemius in extending the foot at the ankle.

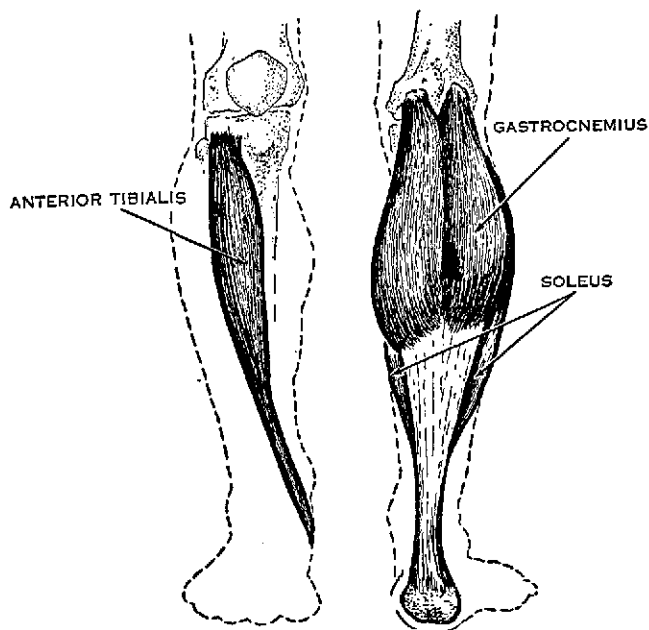


Figure 7. Anterior and posterior muscles of the leg.

Section IV. THE STRUCTURE OF THE CIRCULATORY AND RESPIRATORY SYSTEMS

26. The Circulatory System

The functions of the circulatory system are to transport blood to all parts of the body, to remove waste products for disposal, and to deliver protecting and repairing substances where needed. The heart, veins, arteries, and capillaries form this system.

a. The Heart. This force pump is divided into a right half and a left half (fig. 8). The right half pumps blood to the lungs, and the left half supplies the systems (par. 36). The four chambers of the heart are the right auricle, right ventricle, left auricle, and left ventricle. The heart is a little larger than the fist and is located in the left center of the thoracic region between the two lungs.

b. Blood Vessels. The vessels carrying blood away from the heart are the arteries, which event-

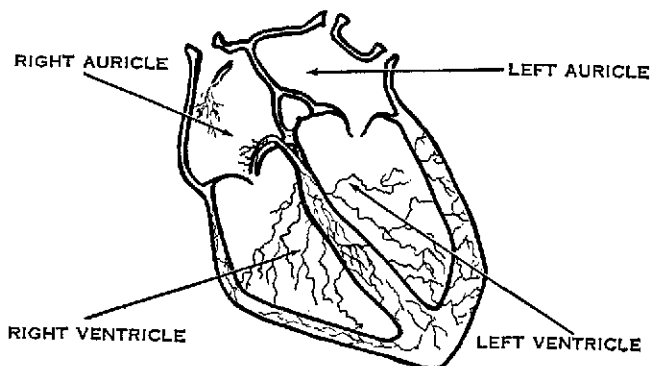


Figure 8. The heart.

ually divide into capillaries, the very small vessels through which diffusion and osmosis takes place. The capillaries gradually increase in size until the veins are formed. Veins carry impure blood back to the heart. See chapter 3 for a detailed discussion of the functioning of the circulatory system.

27. The Respiratory System

The respiratory system consists of the mouth, nose, trachea, lungs, and diaphragm.

a. *Trachea.* The trachea, or "windpipe," is a hollow, tube-like structure that carries air from the mouth to the lungs (fig. 9).

b. *Lungs.* The lungs are elastic bags that contain sections of the windpipe which divide first into the bronchus, then into smaller tubes known as the bronchiole, and finally into small alveoli or air sacs (fig. 9). The exchange of oxygen and carbon dioxide takes place in these air sacs (par. 41).

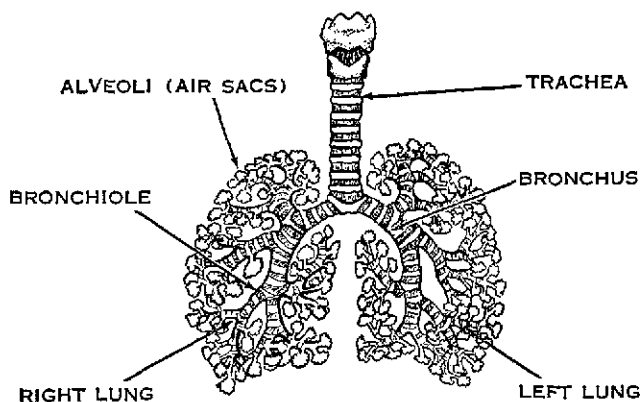


Figure 9. The trachea and lungs.

c. *Diaphragm.* The diaphragm is a thin, sheet-like muscle stretching across the thoracic cavity just below the lungs. During inspiration, the diaphragm flattens out and lowers, allowing the lungs to expand and fill with air. During expiration, the diaphragm raises into a dome shape, helping to reduce the space inside the thoracic cavity. Functioning of the respiratory system is outlined in chapter 3.

CHAPTER 3

BODY FUNCTIONING

Section I. DEVELOPMENT AND FUNCTIONING OF THE MUSCULAR SYSTEM

28. The Overload Principle

a. Muscular use strengthens and improves body functioning; disuse promotes atrophy. Stated another way, the amount of muscular development obtained through exercise is comparable to the demand made on the system. With a normal amount of exercise, muscles develop only enough to perform that amount of work with ease. Only the number of muscle fibers needed to move a given load are brought into play. If there is no further increase in the amount of exercise demand, there is no improvement in the function or increase of strength or endurance. If, however, one wishes to improve the function, this demand must be increased. For example, it is assumed that an individual is able to lift a weight of 40 pounds with his right arm. If this individual were to exercise with a weight of only 3 or 4 pounds, he could exercise until the muscle was practically exhausted, and still such exercise would not markedly increase the *strength* of the muscle, as he already has much more than enough strength to handle that much weight. On the other hand, if this individual were to exercise with a 40-pound weight, he would tire

rather rapidly, perhaps in 5 or 6 movements. If he were to continue to exercise with this load until he could raise it 15 or 20 times, and then increase the weight to 45 pounds, then to 50 pounds, adding additional weight as the strength increased, the muscle would develop in strength and size very rapidly.

b. Another example may be found in circulo-respiratory endurance. If an individual wished to train to the point of being able to run a mile in 4 minutes and 20 seconds, he would have to run faster and faster, relative to his present ability, until this point was reached. If, on the other hand, he were to run a mile in 10 minutes every day, he could do this for many, many years, and still not be able to run a mile at the rate of 6 or 7 minutes. The overload principle then, means that the individual develops in proportion to the demand and that he has to *increase* the demand as his ability increases if he is to continue to improve. Conversely, if the individual does less exercise than he has been accustomed to doing, he rapidly "deconditions." Hence officers and men assigned to sedentary type jobs with opportunity for only very mild exercise rapidly lose their strength.

c. The overload principle does not mean that the individual should be "overloaded" to the point of undue strain. It means that the requirements must be *over* his usual load. In the use of conditioning exercises, the instructor can increase the dosage either by increasing the cadence or by adding to the load carried. In running, for example, the speed

(cadence) can be increased, and in conditioning drills, graduation from drill one to log exercises will increase the load by adding the weight of the log. This is one of the most important principles for the physical training supervisor and instructor to remember and practice.

29. Hypertrophy of Muscle

a. When a muscle is exercised vigorously enough to strengthen it, the muscle itself grows in size. Hence, the larger the muscle, other things being equal, is the stronger muscle. It is apparent, however, that trained muscles function more smoothly and more efficiently than untrained ones. They are able to contract somewhat more vigorously and with apparently less effort. To insure that muscles are developed to the point of hypertrophy, it is necessary that the overload be carried well beyond the present state of development.

b. Regular and strenuous exercise of the muscle also toughens it. The muscle tissue becomes firmer and can stand much more strain. This is due partly to a toughening of the sarcolemma, and also to the development of more connective tissue within the muscle bundles. Whether this so-called toughening effect is temporary or permanent is not known.

30. Circulation in Muscles

When exercise of a strenuous nature is pursued over a prolonged period of time and is engaged in regularly, the blood vessels within the muscular tissue itself increase in number. This increase is partly in the number of new capillaries, which increase as

much as 50 percent in the same volume of muscle. It is also due to the opening of the latent, inactive capillaries which, when combined with the new capillaries, may increase the capillary circulation as much as 400 percent. This gives a much greater supply of food materials and oxygen to the muscle, thereby increasing its endurance. It takes about 8 to 12 weeks for this increase to take place in young men. A longer period is required as age advances. To be effective, the exercise must be regular. Professional athletes who desire to condition themselves rapidly, may train twice a day. After a period of 8 to 12 weeks of inactivity, or very light activity, these extra new capillaries are again absorbed and disappear.

31. Maintenance Principle

a. It is necessary to continue exercising at approximately the same dosage to *retain* the condition developed. A soldier who has been trained until he is in excellent condition will lose this high state of condition on a twenty-day furlough if he does nothing to maintain his condition. Troops could lose the edge of condition on a long journey on a transport where nothing is done to provide exercise.

b. To retain the human mechanism in a well-conditioned state, a *maintenance program* should be instituted. This program can be of relatively short duration. For example, it is possible to maintain this state of conditioning through twenty minutes of exercise a day, but that twenty minutes of exercise must be quite strenuous.

32. Increase in Muscular Coordination

As an individual develops his physical abilities, he increases his strength and endurance. This is due partly to the fact that he has developed better coordination and more skill and is now using only the muscles that are relevant to his task. An unskilled performer, on the other hand, may use many irrelevant muscles, thus increasing the amount of physiological work without increasing the general output of mechanical work. This increase in skill is a highly desirable development, but it should be offset by greater dosage to compensate for the loss in overload due to the increased skill.

33. Muscular Fatigue

a. When the rate (speed) of work is increased, the energy required is proportionately much greater than the increase in rate. For example, if an individual doubles his speed of running, the amount of power demanded to do this is increased eight times. The instructor should be careful when he increases the cadence of the exercise to guard against a tendency to make too great a demand in the length of time the exercise is performed.

b. Fatigue, when brought on by hard, rapid exercise, may be thought of as "intoxication fatigue," as contrasted to "depletion of fatigue" brought on by continued, not too strenuous exercise, such as very long marches. As an effect of training, the complex chemical processes in the muscles become more effective in combating fatigue.

34. Crest Load

When the individual reaches the highest level at

which he can continue for some time, he is then at his "crest load." If he increases the amount of exercise, he quickly runs into an excess of what is called "oxygen debt," that is, he develops more lactic acid than he can resynthesize back into glycogen; thus he is forced to stop his exercise. Continued training raises the level of this crest load. This is an important consideration in military physical training.

35. Various Qualities To Be Developed in Muscles

a. Strength. See paragraph 29.

b. Muscular Endurance. Muscular endurance enables an individual to continue a relatively heavy load of exercise over a long period of time. For example, many men can shovel dirt for five minutes without experiencing undue fatigue; however, continued digging at the same rate for an hour causes them to become exhausted. We experience the muscular exhaustion brought about in local muscle groups by pull-ups, sit-ups, and other tests of endurance. Here the local muscle groups fatigue rapidly, but the man is not exhausted. There is considerable evidence that this type of endurance is almost entirely a combination of *strength* plus *improved local circulation* in the muscle. To improve this type of muscular endurance, strength should be increased.

c. Circulo-Respiratory Endurance. This type of endurance is what most people think of as "wind." To develop endurance of this type, the soldier should have strength and endurance to sustain activity in the muscle group used in the exercise, and the crest

load level must be high. The development of circulo-respiratory endurance is primarily a matter of improved functioning of the heart and lungs (par. 36).

d. Speed and Agility. Both of these qualities are related to strength and, to a certain extent, to muscular and circulo-respiratory endurance. They are developed through specific skills that should be taught and practiced. A properly planned program will provide opportunity for the development of these physiological qualities.

Section II. DEVELOPMENT AND FUNCTIONING OF THE CIRCULATORY SYSTEM

36. Heart Action

a. The heart is the chief organ of circulo-respiratory endurance. The lungs transmit the oxygen from the air to the blood, but it is the heart that propels this blood to the tissues through the blood vessels. If the heart lacks the capacity or slows down so much that the blood does not get around to the muscles, the individual quickly becomes exhausted (fig. 10).

b. The heart itself is a muscular organ and is developed by exercise just as is any other muscle. Obviously, however, the heart cannot be singled out and exercised alone. In other words, an individual working vigorously enough to make the heart beat hard and fast exercises the heart along with the other muscles that are brought into play. This means that in every conditioning program there should be some exercises of the type which will de-



Figure 10. Circulation of blood from heart to the body.

velop "wind," namely exercise of speed, carried out over a fairly long period of time. This type of exercise develops the heart rapidly.

c. One of the results of a speed exercise is that the rate of the heart beat tends to become slower in rest and each heart beat pumps out a greater amount of blood. This is known as an increase in "stroke volume," a desirable condition because it enables the heart to pump more blood with a slower contraction rate. The contraction of the heart is a vigorous one, but when the heart is expanding, or is in "diastole," there is a momentary rest. Other things being equal, the greater the time for this rest, the longer the heart will be able to beat under the same exercise demand without undue fatigue.

37. Circulation of the Blood

a. When an individual is in good physical condition, the pressure of the blood in his veins tends to be higher than in a man out of condition. This increase in venous pressure is important. A pump can move only the amount of fluid that is available to it. In like manner, the heart can pump out into the arteries only the blood that comes to it through the veins. If the pressure in the vein leading into the heart is too low, then the auricle will not fill on the right side and there is not enough blood reaching the ventricle to be pumped forward into the system.

b. The circulation of the body may be divided into three parts: the *general circulation* to the body as a whole; the *portal circulation*, which is the circulation to the abdominal, or digestive organs,

the liver, and other viscera; and *pulmonary circulation*, which is the circulation in the lungs.

38. Portal Circulation

a. When an individual is in poor condition, the sympathetic nerves controlling portal circulation relax and the individual tends to have an excess of blood in the vessels of the stomach area. If this poorly conditioned individual engages in strenuous activity or is subject to emotional pressure, he may experience temporary brain anemia. This may be so serious that the individual faints. It may only cause him to feel dizzy or weak. Exercise will stimulate the sympathetic control of the portal area and press out the blood again into the general circulation.

b. In strenuous exercise where there is a great deal of forced breathing, return of the blood to the heart is facilitated. When the individual breathes in deeply, the pressure within the throat is lessened, hence it "sucks" the blood towards the heart. When he breathes out, the valves in the peripheral veins and the increased intra-abdominal pressure prevent that blood from running back away from the heart. More blood comes to the heart under such forced breathing.

39. Red Blood Cells

Red blood corpuscles or cells are very small circular plate shaped discs (fig. 11). One hundred of these cells in single file would reach across the head of a common pin. The principle purpose of the red cells is to carry oxygen. In order to meet varied

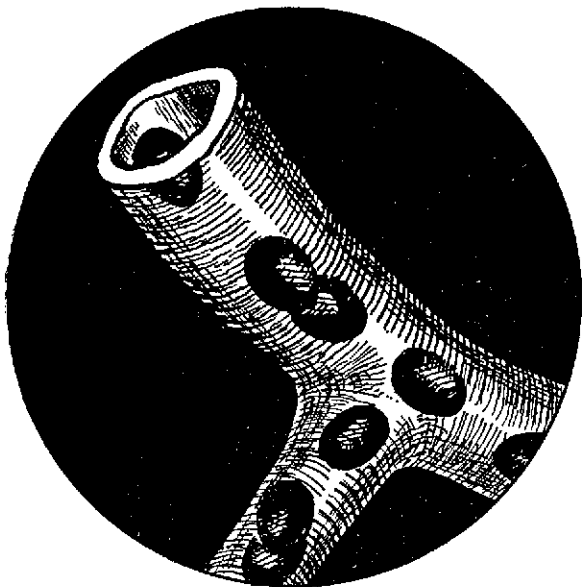


Figure 11. Red corpuscles.

conditions, the body provides a temporary increase in the number of red cells (par. 42).

Section III. DEVELOPMENT AND FUNCTIONING OF THE RESPIRATORY SYSTEM

40. Relationship of Heart and Lungs

In tracing the circulation of the blood, the cycle is started at the point where the carbon dioxide-laden blood is returning to the heart. A large vein, the Vena Cava, carries the blood to the right auricle (upper chamber) of the heart. This blood then passes through the valve into the right ventricle

(lower chamber). At this point, the blood leaves the heart by way of the pulmonary artery for processing in the lungs. In the lungs the carbon dioxide is exchanged for oxygen and the purified blood is returned to the heart by way of the pulmonary vein. The blood then reenters the heart at the left auricle (upper chamber) and passes through the valve into the left ventricle (lower chamber). Here it is pumped into a large artery (Aorta) for passage to the body. As the blood moves into the muscles, it gives off oxygen and takes on carbon dioxide. Moving through the capillaries into the veins, the blood is ready for the return trip to the heart.

41. Functions of the Lungs

a. When there is a demand upon the heart brought about by strenuous and continued exercise, the efficiency with which the lungs transmit oxygen to the blood is increased as much as 25 percent. This increase is attributed to a number of factors. There is some evidence that in long continued programs of exercise, the little alveoli (air sacs) within the lungs, which are the terminal parts of the lungs at the end of the bronchioles or air tubes (fig. 12), actually put in some new partitions.

b. A more acceptable explanation of the increased efficiency of the lungs of the conditioned individual is based on the expansion of the air sacs. In the poorly conditioned individual, some of the air sacs are closed or collapsed. As this individual participates in vigorous exercise, thus placing a greater demand for oxygen upon the body, the forced breathing causes the air sacs to be slowly expanded.

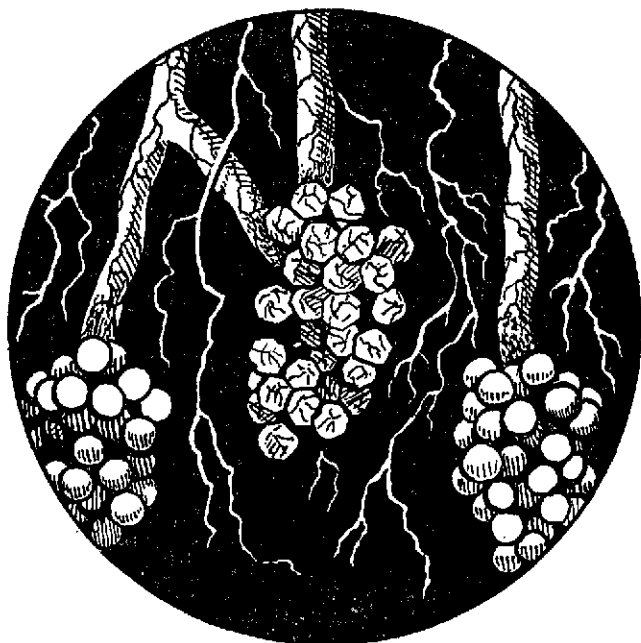


Figure 12. Air sacs in the lungs.

This process occurs over a period of several weeks. Once a large number of these air sacs have been forced open, the lungs have greater absorption surface as each open air sac can contain more oxygen. The small capillaries surrounding each air sac are also extended and a greater number of red corpuscles can circulate around the air sacs.

c. In regular exercise the individual learns to breathe more deeply, and there is apparently an improvement in the way in which the fresh air from the outside gets to the walls of the alveoli. This

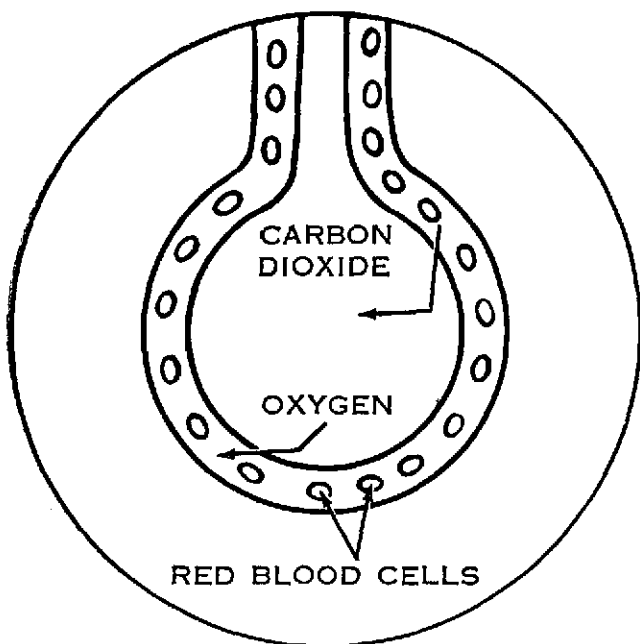


Figure 13. View of a single air sac.

increase in the amount of air breathed into the lungs is partly because of an increase in the flexibility of the chest brought on by increased deeper breathing and partly because of a strengthening of the respiratory muscles.

42. Circulo-Respiratory Function in High Altitude

a. If troops are to be employed in areas of high altitude, they should be acclimatized by prior movement to a similar area for a period of 10 to 14 days prior to their employment. At areas of high altitude

the components of the atmosphere are the same as at sea level, but the air is much less dense. As a result, a soldier can take in—no matter how hard he gasps for air—only about 80 percent of the oxygen he is accustomed to at sea level. Personnel who are accustomed to sea level or moderate altitude simply do not have enough red corpuscles in the blood to fulfill their needs at high altitudes. Since there is no immediate increase in red blood cells, the individual undergoing exertion gasps for breath and his heart beat increases to force as much blood as possible to oxygen starved muscles. Personnel not accustomed to the rarefied atmosphere of higher altitudes tire more quickly and may collapse after rapid physical exertion.

b. The brain is the first organ to react to a lack of oxygen. When the brain is denied a sufficient quantity of oxygen, unconsciousness results. Such "blacking out" is actually a defense mechanism to enable the body to remain alive. When unconscious, the body requires a minimum of oxygen, hence when in a prone position, a maximum supply of blood is permitted to stimulate the brain to a conscious state.

c. Men who are accustomed to high altitude have about one-third more red corpuscles than men from lower areas. These men can exercise strenuously without ill effects or loss of efficiency. After a few weeks, however, a body accustomed to areas of low altitude increases its production of red cells and the body becomes acclimatized to the higher altitude.

Section IV. BENEFICIAL CHANGES IN THE BODY DUE TO EXERCISE

43. Action of the Adrenal Gland

a. The adrenal gland provides two secretions. The secretion that is put out from the medulla, or the interior part, is distributed when there is extreme interest, anxiety, alarm, or danger. It activates almost all of the muscular functions and causes a more efficient muscular action. It enables men to work at a higher level of overload and to feel good while doing it. Competition is frequently one of the best ways of increasing the output of adrenalin.

b. The second output of the adrenal gland is called cortin. This is the secretion that gives one a general sustained level of energy. When there is a pathological change in this gland and the amount of cortin is reduced, the individual has no energy and finds it very difficult to undertake an activity. Individuals who have a high output in this gland are almost super-energetic. Programs of exercise which are strenuous, but not exhausting, increase the output of cortin and cause the individual to feel better and more energetic. Programs of exercise that are so strenuous the man is exhausted for several hours after the exercise, tend to decrease the output of cortin and leave the man feeling spent.

c. This fact should guide us to be very careful in the application of the overload principle. *It should be applied with the individual person in mind.* There

will be individuals in every phase of training who will vary greatly in their physical condition. The program should be modified so that individuals in poor condition will not be overworked to exhaustion, even though the overload principle is being applied.

44. Exercise and Diet

a. Regular exercise has a tendency to increase the appetite. If this desire for greater amounts of food is satisfied with a balanced diet, the body benefits.

b. There are two main types of foods: body building and energy producing. Body building foods consist of proteins, which build up tissue and replace wear and tear. Energy producing foods are of two types—carbohydrates and fats. Carbohydrates provide a quick source of energy, while fats act as a reserve store of energy. In addition, food contains vitamins, mineral salts, and water. During hot weather and strenuous training periods, the fluid intake should be replenished promptly. Proper diet must be supplemented with proper rest to provide the digestive system time to break down the food substances into their constituents and feed it back into the system in the form of energy.

45. Effect of Exercise on Bones

a. Continuous exercise, particularly among younger people, usually brings about certain beneficial changes to the viscera and bones. For example, regular exercise causes the cancellous plates of the bones to become strengthened and to be re-

arranged so they can stand up under greater stress and strain.

b. Bones which are not used lose a large part of their minerals. This should be considered when individuals are returned to the conditioning program after a prolonged period of inactivity. Individuals in this category should be restrained from activities which might result in bone breakage before the stimulus of use has brought the bone back to normal condition.

46. Effect of Exercise on Body Growth

Continuous exercise results in an increase in size and development in structure of the essential vital organs, such as digestive organs, liver, pancreas, etc. This means that the individual develops enough visceral structure to care for the increased demand being made upon these structures. There tends to be an increase in bony growth and development with such strenuous exercise. It is not uncommon for a young soldier to grow half an inch in height and perhaps to put several inches on the circumference of the chest. This increase in girth of the chest is partly due to an increase in the mass of muscles on the back and chest. The increase of shoulder width is partly due to development of muscle on the shoulders, particularly the deltoid muscles. However, there is considerable increase in the length of bones beyond that experienced by inactive workers of the same age.

47. Lymphic Circulation

In addition to the arteries, capillaries, and veins, we have lymph vessels. The plasma from the blood

seeps out through the walls of the capillaries and surrounds all of the cells of the body. The blood which carries the red blood cells does not come in direct contact with these body cells, so that the oxygen, carbon dioxide, and all of the food products have to filter through this lymph to get to the cells of the body. When individuals are engaged in sedentary activity, this lymph tends to move very slowly. The carbon dioxide and the oxygen are still transmitted without difficulty, but this lymph becomes what we might speak of as "stale" and needs to be moved on into the general circulatory mechanism. Exercise causes the lymph to be milked away from around the cells of the body and to be replaced by fresher lymph. This moving of the lymph is accomplished by milking the lymph along into the lymph vessels and up these vessels by active physical exercise. It is important that active exercise be provided regularly and constantly.

CHAPTER 4

CONDITIONING ACTIVITIES

Section I. INTRODUCTION

48. Selection and Use of Conditioning Activities

a. The conditioning activities for the physical training program were selected to meet the criteria listed below. The same criteria should be considered in planning the unit physical training program. A combination of conditioning activities should be scheduled that will—

- (1) Insure all-round body development.
- (2) Be vigorous enough to insure progressive development.
- (3) Facilitate mass participation.
- (4) Provide variety, interest, and recreation.

b. When properly planned and administered, the conditioning activities form the basis for a well-balanced physical training program (TM 21-200). They develop all of the important muscle groups as well as the four components of physical fitness: strength, endurance, agility, and coordination. No single conditioning activity, however, will develop all of these components. See chapter 6 for further details on program planning.

49. Development of Military Skills and Attributes

In addition to developing physical fitness, con-

conditioning activities contribute to the development of military skills and other desirable attributes. Military skills developed through conditioning activities are crawling, creeping, climbing, walking, running, and jumping. Other attributes are initiative, persistence, cooperation, confidence, physical courage, ability to think under pressure, resourcefulness, and the will to win.

Section II. SET CONDITIONING DRILLS

50. Advantages of Set Conditioning Drills

Drills of this type are carefully selected and arranged groups of exercises that develop all the important muscles of the body. After the participants learn the exercises, the drills can be completed in a relatively short time and still provide a strenuous "workout." The set drills can be conducted anywhere, they are readily adapted for large groups, and they can be regulated for dosage and progression. As an aid in scheduling, the time needed to conduct each activity is included in subsequent paragraphs. The time indicated is not sufficient for learning the exercises.

51. Use of Set Conditioning Drills

Only one drill should be used during any period of conditioning. For example, participating in drill one and rifle exercises during the same period would be too strenuous (TM 21-200). Although the set drills are substitutes for each other, they should not be substituted during the toughening and first part of the slow improvement stages of conditioning.

Drill one should be used throughout this entire period.

52. Drill One

a. Description. A set drill of twelve exercises and two alternate exercises. This drill is the core of the program because it reaches and develops all the major areas of the body.

b. Use. Drill one is used during all stages of conditioning and in all phases of training, particularly during the toughening and slow improvement stages of conditioning.

c. Time. Fifteen to 20 minutes is sufficient to complete 12 repetitions of each exercise.

d. Starting Dosage and Progression. The normal starting dosage is 5 repetitions of each exercise. The number of repetitions should be increased 1 per week, if the personnel participate in at least 3 conditioning periods a week. Progression should be slower for persons over 40 years of age and for those who participate in less than 3 conditioning periods a week. Twelve repetitions of each exercise, except the squat jump exercise, is the maximum number prescribed. Eight repetitions of the squat jump exercise is the maximum as part of the drill. Dosage and progression can be further increased by reducing the rest time between exercises.

53. Drill Two

a. Description. A set drill of 12 exercises and 2 alternate exercises, with more emphasis on coordination than in drill one.

b. Use. Because of the improved coordination needed, drill two should be used during the latter part of the slow improvement stage and throughout the sustaining stage of conditioning. This drill adds variety to the program. It is a substitute for drill one because it reaches and develops essentially the same muscle groups of the body.

c. Time. Fifteen to 20 minutes is sufficient time to complete 12 repetitions of each exercise.

d. Starting Dosage and Progression. The starting dosage for drill two is five repetitions of each exercise. Since the men are nearing the sustaining stage of conditioning, progression can be more rapid than the rate recommended for drill one. The age of the group, the amount of time devoted to physical conditioning, and the fitness of the group should be considered to determine the rate of progression. Twelve repetitions of each exercise is the maximum for this drill. Dosage can be further increased by reducing the rest period between exercises.

54. Rifle Exercises

a. Description. Rifle exercises are conditioning exercises performed with a rifle. The additional weight of the rifle makes the exercises more strenuous and provides greater development, particularly of the upper body.

b. Use.

- (1) Rifle exercises are excellent substitutes for drill one and should be used during the latter part of the slow improvement

stage and throughout the sustaining stage of conditioning. Because of the added weight, rifle exercises should not be used during early conditioning in the toughening stage. They can be used to particular advantage when results of the push-up and pull-up events on the physical fitness test are below average.

- (2) Three set rifle drills are prescribed. Rifle drill one and rifle drill two consist of 12 exercises each and reach all major muscle groups. Both erect and ground positions are used in rifle drill one. Rifle drill two does not require ground positions and should be used when ground conditions are poor. Rifle drill three consists of eight exercises designed to develop the strength and endurance of the arms. Since three set rifle drills are available, substitute exercises are not provided.

c. Time. Fifteen to twenty minutes is sufficient to complete twelve repetitions of each exercise of Rifle drills one and two. Rifle drill three is conducted at a fast cadence and should be completed in 5 or 6 minutes.

d. Starting Dosage and Progression. The starting dosage for rifle drills is six repetitions of each exercise. Progression should be made by adding one repetition each week. When one rifle drill is substituted for another, the instructor should begin with the same number of repetitions to which the previous rifle drill had progressed. Twelve repetitions is the maximum dosage recommended for

each rifle drill. Dosage can be further increased by reducing the time between exercises.

55. Log Exercises

a. Description. These exercises are conditioning drills performed with a log. Eleven exercises with two alternate exercises constitute the set log drill.

b. Use. Log exercises are used as a substitute for drill one during the latter part of the slow improvement stage and throughout the sustaining stage of conditioning. They are excellent for developing strength and muscular endurance because the muscles are required to contract under maximum loads. Several periods of log exercises during the sustaining stage of conditioning will provide welcome relief from the routine of drill one. Because of the increased weight used in the exercises, the men should be in good physical condition before participating in this drill. Log exercises should not be used during the toughening stage of conditioning.

c. Time. Fifteen or twenty minutes is adequate to complete 12 repetitions of each log exercise.

d. Equipment. Log exercises are conducted by 6- or 8-man teams. Logs for a 6-man team should be approximately 14 feet long, 6 to 8 inches in diameter, and weigh approximately 300 pounds. Logs for the 8-man team should be approximately 18 feet long, 6 to 8 inches in diameter, and weigh approximately 400 pounds. Each man should have approximately 50 pounds to lift. The logs should be skinned, smoothed, and dried, with rings painted on them to indicate each man's position. A rack

should be constructed to keep the logs from touching the ground during storage. A physical training stand for the instructor is desirable.

e. Starting Dosage and Progression. The starting dosage should be five repetitions of each exercise. Progression is made by adding one repetition each week until 12 repetitions have been reached. Progression is further increased by decreasing the time between exercises.

f. Formation for Conduct of Log Exercises. Platoon column of logs, five yards between logs, is recommended for the exercises.

Section III. OBSTACLE AND CONFIDENCE COURSES

56. Importance to the Program

As an aid in the development of basic military skills, the obstacle and confidence courses are valuable additions to the physical training program. Through instruction in the technique of negotiating the course, men learn how to run, climb, creep, crawl, hurdle, and jump. These courses also contribute to the development of strength, endurance, agility, and coordination.

57. Obstacle Course

a. Description. Obstacle courses consist of a number of natural or man-made obstacles that the participants must negotiate against time. Obstacle courses are nonstandard since topographical conditions vary with each installation. The course should take advantage of streams, hills, trees, rocks,

and other natural obstacles. Suggestions and illustrations for fabricating man-made obstacles and the safety factors to be considered are included in TM 21-200.

b. Use.

- (1) Obstacle course running is not a substitute for the set conditioning drills but, like the conditioning drills, it is a valuable activity that develops strength, muscular and circulo-respiratory endurance, agility, and coordination. Because it is a vigorous and exhausting activity, the obstacle course should not be scheduled for the same period as one of the set conditioning drills.
- (2) An obstacle course serves a dual purpose. In addition to improving the individual's physical condition, it develops fundamental skills and abilities that are important to soldiers in combat.
- (3) The obstacle course should not be run until the participants have completed at least two weeks of physical conditioning. By that time, they should have developed enough strength and endurance to safely negotiate the obstacles.
- (4) The best substitute for obstacle course running is grass drill (par. 61).

c. Inspection and Instruction.

- (1) Safety is a major factor in running obstacle courses. The obstacles must be sturdily built and free of sharp corners,

rotten boards, and protruding nails. Landing pits used for jumping or vaulting should be filled with sand or sawdust. Ropes used should not be frayed or rotten.

(2) When teaching the obstacle course, the instructor should—

- (a) Conduct warmup exercises for the group.
- (b) Take the group to each obstacle and explain and demonstrate the proper technique of negotiating it.
- (c) Permit each individual to practice on each obstacle until he becomes reasonably proficient.
- (d) Have the men run the entire course at a slow pace several times. Make corrections in execution during this phase.
- (e) When the men are proficient at negotiating the obstacles, run the course against time.

d. Running the Obstacle Course Against Time.

A standard time for running the obstacle course is not prescribed. By keeping records of completed running time, however, various times can be established on percentile levels. Once these levels are established, an individual can determine if his time is average, below, or above the average of personnel who ran the course before him. A recommended method of timing is explained in TM 21-200.

58. Confidence Course

a. General. The confidence course is a series of constructed obstacles similar to the obstacle course.

Its principle function is to help develop confidence and a spirit of daring in the individual. For emphasis on physical conditioning, the obstacle course would be used. The confidence course should never be run against time. Personnel should be encouraged, but never forced to negotiate the obstacles. Those men who lack enough strength, courage, or ability to try the confidence course should be provided exercise on items of equipment such as pull-up bars, low hurdles, ropes (to climb), etc. They should be supervised to insure that these alternate activities contribute to developing physical fitness. The confidence course should not be run until the participants have had two weeks of conditioning to insure the development of sufficient strength and endurance, but it should be run during individual training.

b. Methods of Instruction. The instructor should employ the following procedure when teaching men how to negotiate the confidence course:

- (1) If the men are new to the confidence course, conduct a brief orientation at each obstacle, including an explanation and demonstration of a method of negotiation.
- (2) Encourage the men to negotiate the obstacle, but do not force them. If a man wishes to skip an obstacle, permit him to do so.
- (3) Leave the manner and speed of negotiating the obstacle to the discretion of the individual, but assist any soldier who asks for advice.

c. Inspection. Inspection techniques for the confidence course are the same as for the obstacle course.

d. Equipment and Operation. Suggested obstacles for the confidence course and details of operation are explained and illustrated in TM 21-200.

Section IV. SUPPLEMENTARY ACTIVITIES

59. Function of Supplementary Activities

Vigorous activities that contribute to the conditioning of the soldier are needed to supplement the formal conditioning exercises discussed in paragraphs 50 through 55. One or more supplementary activities should be scheduled with each conditioning drill during the toughening and slow improvement stages of conditioning. Employing these activities with the set conditioning drills furthers the development of "wind," strengthens muscles, and improves coordination and agility. Other desirable results are a toughening of the muscles and improved alertness, aggressiveness, teamwork, and cooperation. All the supplementary activities provide change and variety to the program while retaining the advantage of vigorous activity.

60. Running

a. Function. Running is the best single activity to build up circulo-respiratory endurance. A person may develop superb muscle structure and strength, but without sufficient circulo-respiratory endurance he is neither physically fit nor combat ready.

b. Use. Some type of running should be included

in every conditioning period during the toughening, slow improvement, and sustaining stages of conditioning. Running should also be a part of every conditioning program for the individual, unit, and specialist and staff personnel training. As a supplement to the set conditioning drills, 5 minutes of running should be scheduled initially and periodically increased to a maximum of 15 minutes.

c. Dosage and Progression. The dosage for each type of running activity is prescribed in TM 21-200, but it can be increased by running farther and faster with less time between sprints, or by running for a longer period of time.

61. Grass Drill

a. Function. Grass drills, vigorous activities involving ground contact, have a desirable hardening effect on the muscles. They require continuous changes in body position which improves agility, coordination, mental alertness, and muscular and circulo-respiratory endurance.

b. Use. Grass drill should be used frequently during the toughening and slow improvement stages of conditioning. Because of its vigorous nature and to insure sufficient warmup, grass drill should be conducted immediately after drill one. It should not be scheduled during the same period with guerilla exercises. Initially, 2½ to 3 minutes of grass drill are sufficient, progressing to a maximum of 5 minutes for well-conditioned troops.

c. Dosage and Progression. In addition to increasing the time devoted to grass drill, dosage and progression can be further increased by speeding

up the exercises and changing the position of the body more rapidly.

62. Guerilla Exercises

a. Function. Guerilla exercises are vigorous, big muscle activities that require major changes in body position. These exercises contribute to the development of strength and endurance.

b. Types. There are two types of guerilla exercises: singles and doubles. Single guerillas consist of three kinds: ground (on hands and feet); squat bend (bending the legs or trunk); and erect. Doubles are executed with the men in pairs.

c. Use. Guerilla exercises should be used during the toughening and slow improvement stages of conditioning. To insure proper warmup, they should be employed immediately after drill one. Guerilla exercises should not be scheduled during the same period as grass drill, and the types and kinds should be alternated. Five minutes of actual exercise progressing to a maximum of 10 minutes should be scheduled for guerilla exercises.

d. Dosage and Progression. In addition to adding time for the exercises, dosage and progression can be further increased by doing each exercise longer, increasing the number of exercises (6 to 8 for well-conditioned troops) and by decreasing the quick time period between exercises.

e. Formation. The platoon in a circle formation is recommended for best control, supervision, and organization.

63. Combatives

a. Function. Combatives are supplementary activities that train a man to react violently and aggressively. They contribute to the development of resourcefulness, confidence, strength, agility, coordination, endurance, and the will to win.

b. Use and Type of Combatives. Combatives are used during the toughening and slow improvement stages of conditioning. They should follow guerilla exercises or grass drill during the conditioning period. There are two types: dual and group combatives. Dual combatives require participation in pairs and are recommended for general use. Group combatives entail group participation and require advance preparation.

c. Time. Fifteen minutes should be sufficient to teach the combatives. Once the personnel have learned them, 5 minutes should be adequate to provide a good workout.

d. Dosage and Progression. Start with 3 or 4 activities for 1 minute each, or the best of 3 falls. Progress by increasing the number of activities and by selecting the more difficult combatives.

e. Formation. The extended rectangular formation is modified for dual combatives. The formation for group combatives varies with the combative selected.

Section V. MASS GAMES AND RELAYS

64. General

Mass games and relays are excellent activities

for the slow improvement and sustaining stages of conditioning and contribute to muscular and circulo-respiratory endurance. They develop desirable traits in the soldier that cannot be developed through set conditioning drills, such as aggressiveness, team spirit, and the will to win. In addition, short periods of mass games and relays provide stimulating competition, recreation, and mental relaxation. As a general rule, mass games should not be scheduled during the same period with relays, nor should they be substituted for the purely conditioning type drills.

65. Mass Games

a. Function. The mass games explained in TM 21-200 require little organization or teaching. Many of the mass games employ body contact which helps to develop the will to win, teamwork, and team spirit.

b. Use. Mass games are used during the slow improvement and sustaining stages of conditioning, with mass participation the constant objective.

c. Types of Games. Mass games are classified according to the type activity they represent. There are baseball types, net types, soccer types, basketball types, and games for restricted areas. Games in the latter group are not related to any particular sport. Mass games require little space. Men like them, but they will not sustain interest for long periods.

d. Time. Mass games should be limited to 20 minutes during a 45-minute period of conditioning.

e. Dosage and Progression. Dosage may be increased and progression obtained by scheduling

more difficult games. The men must participate vigorously to insure a beneficial workout.

66. Relays

a. Function. Relays are excellent conditioning activities, particularly for developing circulo-respiratory endurance. In addition, they contribute to the development of aggressiveness, esprit de corps, and the will to win. Interspersing relays throughout the program for short periods of time provides a desirable change of activity, enjoyment, and mental relaxation.

b. Use. Relays are used during the slow improvement and sustaining stages of conditioning. They should not be scheduled during the same period with mass games nor should they be substituted for the conditioning type drills. Teams should consist of six to ten men except for dual- or triple-type relays. The types of relays should be varied, but when running relays are used predominately some of the other running activities may be reduced.

c. Types Relays are classified as crawling, running, and carrying relays. There are four methods of conducting the relays: the lane, shuttle, circle, and cumulative methods. Refer to TM 21-200 for a detailed explanation of the types of relays and methods of conducting them.

d. Time. Relays should be limited to 20 minutes during a 45-minute conditioning period.

e. Dosage and Progression. Dosage is increased and progression made by using more difficult relays

and increasing the distance the men are required to run, carry a man, or crawl.

f. Formations. Relays should be conducted in platoon size groups. The type of relay determines whether the lane, shuttle, circle, or cumulative method is used.

Section VI. TEAM ATHLETICS

67. Value of Athletics

a. Athletics supplement the more vigorous conditioning type activities, rather than replace them. For these reasons, athletics should be scheduled during the latter part of the slow improvement and sustaining stages of conditioning.

b. Because of the competitive nature of athletics and their natural appeal, the men participate in them enthusiastically. Athletic teams formed at the intramural and higher levels are a strong unifying influence and provide one of the best means of developing esprit de corps. Competitive games offer a diversion from military duties and give the men an opportunity for wholesome self-expression.

68. Selection of Athletic Events

Although the athletics discussed in this section can be used in the off-duty program, they are intended for the on-duty program. Since the primary objective is to further develop physical fitness, the athletics selected should have vigorous conditioning characteristics and facilitate 100 percent participation. To stimulate interest and furnish variety from the purely conditioning type activities, they

should provide competition between groups. Athletics should employ the skills developed during mass games. For example, the skills learned in mass soccer,—kicking, dribbling, and heading—can be applied to regulation soccer.

69. Types of Athletics

The following games meet the above criteria and are used during the on-duty program. Details for teaching and conducting these athletics are contained in TM 21-200.

- a. Basketball.
- b. Cross-country running.
- c. Soccer.
- d. Softball.
- e. Speedball.
- f. Touch football.
- g. Volleyball.

70. Swimming

a. Many soldiers have died because they were unable to manage themselves in the water. Some lacked training in methods of swimming and water safety generally, and others lacked instruction and practice in the specific problems of amphibious warfare.

b. Swimming is an athletic activity, but is not included as an athletic event for team competition on a mass basis. It should be included as part of the on-duty program with emphasis on instruction in swimming and lifesaving.

c. Techniques of teaching swimming and lifesaving are included in TM 21-200.

CHAPTER 5

PHYSICAL TRAINING LEADERSHIP

Section I. GENERAL

71. Leadership Responsibilities of Commanders

a. Maximum command attention and staff supervision at all echelons to the physical training program is required, since minimum time is allocated exclusively to physical training. This requires that all commanders and those directly charged with the planning, supervision, and conduct of physical training be thoroughly familiar with the mission, objectives, activities of the program, and the proper means of individual and program evaluation.

b. Allotment of time is a commander's responsibility. Frequently, there is a tendency to subordinate physical training to other training activities. The utilization of scheduled physical training time for other training activities or for routine duties is both unsound and unwise.

c. Unit officers and noncommissioned officers charged with supervision of the program actively and physically participate in the program. The desired leadership can be attained and reflected in the unit training program by officers and noncommissioned officers who set the example. Any tendency to act solely as nonparticipating supervisors of physical training activities is discouraged.

d. Provisions are made to include appropriate physical training instruction in all leaders' courses. Branch service schools include physical training instruction appropriate to the rank and likely future duty assignments of the student. For non-commissioned officer students, officer candidate students, and basic officer students, emphasis is placed on instruction in the conduct of the program, to include the execution of the various physical training activities. Advanced students receive instruction in the effects of exercise upon the body, and methods of planning, scheduling, and supervision of the physical training program.

e. Every effort is made to properly assign and utilize qualified officers and enlisted men in the supervision and conduct of the Army's physical training program. If trained junior leaders are not available within units, commanders take necessary action to train personnel locally in sufficient numbers to support the program.

f. Commanders provide sufficient time each week for all officers and enlisted personnel to engage in physical conditioning exercises. Special attention must be given to personnel after extended travel, leave, or sickness to return them to the highest possible degree of physical fitness promptly.

g. Commanders provide supervision of the physical training program at all levels. Evaluation of individuals and units should occur periodically to serve as an index of physical condition. Inspectors of training evaluate physical condition of personnel to determine whether satisfactory standards are being achieved (ch. 11).

h. Continuous attention to good posture and corrective action is necessary at all times and is especially applicable during formation and marching. Constant postural reminders coupled with increased muscle tone usually result in improved bearing.

72. Essential Qualities of the Instructor

The success or failure of the physical training program depends upon the quality of its leadership. The best results can be obtained only if the men are properly motivated. A successful physical training program requires the full cooperation of all the men. If physical training activities are to be of value, they must be done accurately and intensively. Since it is impossible to force troops to exercise properly, every effort must be made to stimulate them to better effort. Mechanical participation without purpose, enthusiasm, and vigor is undesirable and must be forcefully countered with improved motivation. For these reasons only the best qualified personnel should be selected to instruct.

a. The most essential qualities of the physical training leader are abounding energy and enthusiasm. The men invariably reflect their leader's attitude and performance, whether it be enthusiastic or apathetic. The enthusiasm of the leader comes from realizing the importance of his mission. He must remember that what he does every minute of every day may mean the difference between victory and defeat on the battlefield.

b. The instructor must have complete mastery of his subject matter. He must be able to explain and demonstrate all the activities and know the best

methods of presenting and conducting them. The well-prepared, confident leader gains the respect and cooperation of the men at the outset. The unprepared, hesitant instructor loses the confidence and respect of his men almost immediately. The good leader informs his men of the value of the different activities and the reasons for their inclusion in the program. He treats his men with consideration and does not impose unreasonable demands upon them. If men are exercised too violently, they become so stiff and sore that they look upon the next physical training period with apprehension. The men develop an antagonistic attitude toward the instructor and the program, and instead of cooperating, they malingering at every opportunity. Wise leadership will prevent this condition.

c. The successful leader understands human nature. He appreciates the physical and mental differences of men, learns to know his group as individuals, and quickly recognizes the signs that indicate their reactions to his instruction. The better he understands his men and the more he can see the physical training program from their point of view, the more successful is his instruction. One of the best methods of motivating participation in the more formal physical training activities is to combine them with athletics. Conditioning exercises, guerilla exercises, grass drills, log exercises, and running are activities about which soldiers are not particularly enthusiastic, but they engage in them conscientiously and vigorously if they are followed by stimulating, competitive sports and games. Even though men realize the value of the purely condi-

tioning activities, they need the additional incentive to continue to put forth their full efforts over a long period of time.

d. The personal appearance and physical qualifications of the instructor are related to his effectiveness as a leader. He should exemplify what he is teaching. He has a great advantage if he can do all and more than he asks of his men. He must be physically fit because physical training leadership is so strenuous that considerable strength, endurance, coordination, agility, and skill are essential prerequisites for success. Commanding officers provide one of the best incentives by participating in the physical training program. When troops feel that their commanders believe in physical conditioning enough to regularly engage in the activities, they are motivated to greater effort. In addition, troops invariably develop a greater esprit de corps and respect when their officers participate.

e. The instructor must commend good performance as quickly as he censures bad. Most men respond to praise. Whenever an individual performs an activity with exceptionally good form or results, it is a good idea to ask him to demonstrate it before the group. It is particularly important that the leader praise the less skillful performers when the occasion merits. The instructor must be able to distinguish between poor performance caused by lack of ability or aptitude on the part of the soldier, and poor performance caused by indifference or lack of effort. He should treat the first with patience and understanding, the latter with firmness; he must never apply sarcasm and ridicule. The judicious ex-

ercise of a sense of humor is often helpful. Using the men frequently as assistant leaders serves as an incentive to many of them. They work hard for this honor and usually respond well to the responsibilities. Using mass cadence is also very helpful in making the men feel a part of the program.

f. Employ a positive rather than a negative approach in making corrections and giving demonstrations. It is much more effective to say "Keep your knees straight" than "Don't bend your knees." It is always better to demonstrate the correct rather than the incorrect form of an exercise or activity. The negative approach must not be identified with physical conditioning. No physical training activity is used as a punitive measure.

g. Instructors must create among their men the desire to be fit. All soldiers must be convinced of the necessity for being in excellent physical condition.

- (1) A very effective method of accomplishing this is to explain to them the military value of physical training activities. The leader must convince his men that a high level of physical fitness will give them a much better chance to survive in combat. When troops realize that their efforts are an investment in their own personal welfare, it is not difficult to secure their wholehearted cooperation.
- (2) Another method of motivation is physical fitness testing. Many men are motivated to improve their condition when their

physical deficiencies are revealed to them by the testing program. Others feel challenged by the tests and strive to improve their score on the next one. Men compete against each other to show the greatest improvement. Some commanding officers offer incentives to those men with the best records. Others provide encouragement and opportunity for additional conditioning to those men who have test scores considerably below the average. All of these devices serve to stimulate interest and more vigorous participation in the physical training program.

h. To carry on an effective daily program, leaders will find it necessary to prepare lesson plans. Even the most experienced leaders find it helpful to review the materials to be covered. No instructor should refer to notes or to a card during the course of the physical training period. He should know the material. Every instructor must be thoroughly prepared before he is given the responsibility of instructing a group. He must be ready to meet various problems and be prepared to employ different leadership techniques according to the type of activity presented. Some activities are formal in nature, while others are informal. Specific leadership techniques in the conduct of conditioning exercises, supplementary activities, mass games, relays, obstacle course, physical fitness testing, athletics, and posture training are contained in TM 21-200.

Section II. IN-SERVICE TRAINING

73. Purpose of an In-Service Training Program

In many instances, the release or transfer of personnel leaves a unit or committee short of qualified physical training instructors. An in-service training program for instructors should be established to overcome this deficiency.

74. Command Support

a. Command support is essential to the organization and conduct of an in-service physical training program. When the commander has determined the needs of his organization and allocated time to such a program by means of a training directive to implement this program, a definite schedule may be planned and a program of instruction outlined.

b. To determine an organization's need for physical training instructors, unit commanders should be interviewed as to the level of training in progress and the deficiencies existing in the present program. It is desirable that two or three qualified instructors be available in each platoon. Only with an adequate number of instructors who have a thorough knowledge of the Army physical training program and who can effectively teach and conduct physical training, may the individual soldier receive the training needed to reach the required level of fitness.

c. The effectiveness of the in-service training program is determined, in part, by the instruction time available. A full time school is preferable so the student may completely devote his time and energy

to the program of instruction. Such a school should be conducted periodically to meet the constant need for qualified instructors. In the preliminary planning for the school, instructors must be chosen far enough in advance to be available at the desired time. Time is also required to requisition equipment. The scheduling of areas and classrooms requires careful coordination.

d. To conduct a full time course in units undergoing a heavy program of training would be extremely difficult. It may be necessary to conduct the school at regular intervals during available duty and off-duty time. Careful scheduling can eliminate most interference with the students' regular duty assignments.

e. In either the full time or part time course, the classes should be regularly scheduled. The length of the course depends on many factors, but should contain the basic core of the physical training program (fig. 20). If at all possible, the course should be open to anyone who shows interest. The company commander should conduct a preliminary screening of students, guided by the qualifications for school attendance.

75. Authority for Establishing the Course

A directive for setting up the course should contain—

- a.* The purpose and scope of the program.
- b.* The location of the school.
- c.* The date and time men should report and date of completion of course.

- d.* Unit quotas.
- e.* A list of equipment and clothing required.
- f.* A list of prerequisites for attendance.

76. Selection of Personnel

Students selected should—

- a.* Be volunteers.
- b.* Show interest and enthusiasm in physical training activities.
- c.* Possess leadership qualities.
- d.* Have good physique and command voice.
- e.* Have sufficient time remaining in service to justify training.

77. Instructors

a. The number of instructors needed to conduct the course is determined by the length and scope of the course. They should be chosen by a survey of personnel records supplemented by personal interviews. The instructor should be—

- (1) A graduate of an Army physical training course of instruction. (This is the best source of instructors because they are already familiar with Army physical training.)
- (2) A person with civilian training in physical education. It must be realized, however, that he must be familiarized with the Army physical training program.
- (3) An individual who is, or has been, a skilled performer, official, coach, or who has

demonstrated an interest in athletics and physical training.

b. Instructors without previous experience or instruction in Army physical training must be trained before the course is held.

78. Facilities and Equipment

The amount and type of facilities and equipment needed depend on the number of students and the scope of the instruction. Those normally required are—

a. Classrooms and outdoor training areas.

b. Visual aids (charts, slides, films, and blackboards).

c. Physical training instructor stands.

d. Obstacle courses and confidence courses.

e. Pull-up bars; rope climb.

f. Athletic equipment (balls, nets, gloves, bases, backstops, etc.).

g. A copy of this manual and TM 21-200 for each student, with a list of references for each class period.

79. Conduct of Classes

To conserve time and to insure the most efficient conduct of the classes, the commander should prescribe a standing operating procedure for the course. The SOP should provide for—

a. Student leadership of the class.

b. Wearing of the uniform.

- c.* Marching between classes.
- d.* Time for breaks.
- e.* Grading and rating of students.
- f.* Certificates of completion of the course.
- g.* Failing incapable students.
- h.* Graduation.

80. Basic Elements of the Physical Training Instructor Course

The basic elements of the physical training instructor course are—

a. Conditioning exercises—drill one, drill two, rifle exercises, log exercises, and obstacle and confidence courses.

b. Supplementary activities—running, grass drills, combatives, and guerillas.

c. Mass activities—mass games and relays, athletic carnivals, and field meets.

d. Organized athletics—basketball, touch football, etc.

e. Background subjects—nature of physical fitness, physiology of exercise, anatomy, officiating, intramural athletics, tournaments, and program planning.

f. Physical fitness testing.

81. Selecting a Program of Instruction

a. A definite program of instruction cannot be prescribed for all units. However, each of the basic elements in paragraph 80 should be included in every course. The degree to which each element is em-

phasized depends on the needs of the students and their respective units. If the troops need a basic program, the bulk of the classes should be conditioning exercises and supplementary activities. If the units are in an advanced stage of training, leadership of mass activities and organized athletics should be stressed. The background subjects should be included, regardless of unit needs. They give the student a greater knowledge, understanding, and personal justification of the physical training program. The proper administration and evaluation of physical fitness testing is also an essential element.

b. The course that is selected, regardless of emphasis or length, requires careful scheduling and coordination. The classes should be 2-hour periods, conducted often enough each week to retain student interest. They should be scheduled for either the last 2 hours of the morning or afternoon. Only 1 hour of conditioning activities should be included in a 2-hour period. The hours for a common subject block of instruction should be scheduled in sequence. A lesson giving background information for another should always come first. For example, the students should be familiar with the exercises of drill one before learning the methods of instruction for drill one. The same principles apply to a full-time school. To keep the school from being too strenuous, the hours of classroom instruction and hours of activity should be alternated.

82. Evaluating the Program

a. The physical training instructor must know his subject, employ sound teaching techniques, and

have poise. The instructor training course should give him an opportunity to practice and demonstrate these qualities, as well as teach him the fundamentals of physical conditioning. Only by participating can the instructor gain the experience and ability required to simultaneously teach and demonstrate the various activities. Although he may not demonstrate complete proficiency in the desired qualities until he is instructing in his unit, the course may be evaluated initially by determining how much practical training it offers the student. It should emphasize his gaining experience on the instructor's stand and in conducting the supplementary activities.

b. Evaluating the program is a continuous process. It involves not only the course in progress, but constant observation of the instructors who have graduated to determine if the course is meeting the need for trained instructors in the unit.

Section III. SUPERVISION OF PHYSICAL TRAINING

83. Responsibility

The commander is responsible for seeing that the physical training program is planned, organized, and conducted with the same high standard applied to other types of training. The physical training supervisor's function is to see that the objectives of the program are reached and that the components of physical fitness are developed in each individual of the command.

84. The Physical Training Supervisor

A physical training supervisor is any person whose duty is to plan, observe, evaluate, and improve the physical training program. He may be a platoon leader, company commander, an operation and training officer, or a physical training committee chief.

85. Knowledge and Methods

The physical training supervisor should be familiar with the latest physical training policy and doctrine and be fully trained in the techniques developed to reach the objectives of the program. As a background, he should know and be keenly interested in the construction and functioning of the human body. The methods he uses in planning and scheduling, in training instructors, and in procuring and using facilities must insure the continuity of the program. Specifically, he is responsible for—

a. Making the approved techniques generally known to the command.

b. Insuring that directives, manuals, training aids, and facilities are available.

c. Planning instructor training courses. He should anticipate the need for this training and recommend appropriate courses without waiting to detect weaknesses in the program.

d. Guiding and informing instructors.

e. Frequently observing training and, when needed, conducting short schools, clinics, conferences, field trips, and demonstrations for the instructors.

- f. Scheduling the physical training program.
- g. Evaluating the effectiveness of the program.

86. Improving Instruction Through Supervision

a. The effectiveness of the physical training program depends on several factors, the most important

CONDITIONING EXERCISES Inspection Check Sheet	
Inspected by: _____	Date: _____
Unit Inspected: _____	Phase of Training: _____
Instructor: _____	PT Period: _____
1. Subject:	
_____ Drill No. 1	_____ Drill No. 2
_____ Rifle Exercises	_____ Log Exercises
2. Administrative Deficiencies:	
_____ Area Inadequate	_____ Time Wasted in Forming for Drill
_____ Area Needs to be Improved	_____ Time Wasted Between Exercises
_____ Instructor's Stand Inadequate	_____ Lesson Plan Inadequate
_____ Instructor's Stand in Wrong Place	_____ No Lesson Plan
3. Instructor Deficiencies:	
_____ Formation Incorrect	_____ Explanation Improper
_____ Cadence Poor	_____ Demonstration Improper
_____ Cumulative Count Not Used	_____ Failed to Make Corrections
_____ Commands Improper	_____ Motivation Poor or Lacking
_____ Voice Poor	_____ Faulty Instructional Methods Used
_____ Control Poor	_____ Assistant Instructors Ineffective
_____ Bearing or Appearance Poor	_____ Exercises not Employed in Order
4. Unit Deficiencies:	
_____ Attitude Improper	_____ Inadequate Number of Assistants
_____ Execution Poor	_____ No Command Supervision
5. Comments: _____	

Figure 14. Conditioning exercises—a type inspection check sheet.

being the quality of instruction in the unit. The commander and physical training supervisor cannot depend solely on the instructor training course to insure high instructional standards. Such a course can lay the groundwork, but only through expert supervision can the standards be maintained and raised.

ATHLETICS
Inspection Check Sheet

Inspected by: _____	Date: _____
Unit Inspected: _____	Phase of Training: _____
Instructor: _____	PT Period: _____

1. Subject:

_____ Basketball	_____ Softball	_____ Touch Football
_____ Cross Country	_____ Speedball	_____ Volleyball
_____ Soccer	_____ Swimming	_____ Other

2. Administrative Deficiencies:

_____ Area Inadequate	_____ Equipment Not Organized or not Available
_____ Area Requires Maintenance	_____ Time Wasted in Organizing Class
_____ Court or Field Not Marked	_____ Lesson Plan Not Present or Inadequate

3. Instructor Deficiencies:

_____ Voice Poor	_____ Drill Formation Incorrect
_____ Class Control Poor	_____ Drills Poor
_____ Bearing or Appearance Poor	_____ Rotation During Drill Poor
_____ Explanation Not Clear	_____ Supervision Poor
_____ Explanation Incorrect	_____ Motivation Poor or Lacking
_____ Demonstration Not Planned	_____ Scrimmage Poorly Organized
_____ Demonstration Incorrect	_____ Officiating Poor

4. Unit Deficiencies:

_____ Attitude Improper	_____ Inadequate Number of Assistants
_____ Execution Poor	_____ No Command Supervision

5. Comments: _____

Figure 15. Athletics—a type inspection check sheet.

b. The supervisor should keep himself available to the instructors for counseling and should help them plan their programs. He can evaluate the effectiveness of their instruction by inspecting the training, analyzing the physical fitness tests, interviewing commanders and men, and holding conferences with the instructors.

SUPPLEMENTARY ACTIVITIES
Inspection Check Sheet

Inspected by: _____ Date: _____
Unit Inspected: _____ Phase of Training: _____
Instructor: _____ PT
Period: _____

1. Subject: (Use Separate Check Sheet for Each Activity)

<input type="checkbox"/> Running	<input type="checkbox"/> Guerrilla Exercises
<input type="checkbox"/> Grass Drills	<input type="checkbox"/> Combatives

2. Administrative Deficiencies:

<input type="checkbox"/> Area Inadequate	<input type="checkbox"/> Time Wasted Between Exercises
<input type="checkbox"/> Area Needs to be Improved	<input type="checkbox"/> Lesson Plan Inadequate
<input type="checkbox"/> Time Wasted Forming for Activity	<input type="checkbox"/> No Lesson Plan

3. Instructor Deficiencies:

<input type="checkbox"/> Formation Incorrect	<input type="checkbox"/> Demonstrations Improper
<input type="checkbox"/> Commands Improper	<input type="checkbox"/> Failed to Make Corrections
<input type="checkbox"/> Voice Poor	<input type="checkbox"/> Motivation Poor or Lacking
<input type="checkbox"/> Control Poor	<input type="checkbox"/> Used Faulty Instructional Methods
<input type="checkbox"/> Bearing or Appearance Poor	<input type="checkbox"/> Assistant Instructors Ineffective
<input type="checkbox"/> Explanations Improper	<input type="checkbox"/> Enthusiasm Lacking

4. Unit Deficiencies:

<input type="checkbox"/> Attitude Improper	<input type="checkbox"/> Inadequate Number of Assistants
<input type="checkbox"/> Execution Poor	<input type="checkbox"/> No Command Supervision

5. Comments: _____

Figure 16. Supplementary activities—a type inspection check sheet.

c. The type inspection check sheets in figures 14 through 18 provide the supervisor with a method of recording the results of his inspection. He should use them as a basis for reports to higher headquarters and for conferences with the instructor.

PHYSICAL FITNESS TESTING
Inspection Check Sheet

Inspected by: _____ Date: _____
Unit Inspected: _____ Phase of
Person in _____ Training: _____
Charge of Test: _____ PT
Period: _____

1. Subject:

_____ Physical Fitness Test _____ Physical Achievement Test

2. Administrative Deficiencies:

_____ General Testing Area Inadequate _____ Score Cards Deficient
_____ Time Wasted _____ Order of Events Incorrect
_____ Scores Not Trained _____ No Unit Command Supervision

3. Events Area Deficiencies:

_____ a Pull-Up Bars _____ a 5-Second Rope Climb
_____ b Squat Jumps _____ b 76-Yard Dash
_____ c Push-Ups _____ c Triple Broad Jump
_____ d Sit-Ups _____ d 150-Yard Man Carry
_____ e 300-Yard Run _____ e One Mile Run

4. Orientation Deficiencies:

_____ General Information Inadequate _____ Information on Scoring System Lacking
_____ Inadequate Group Motivation _____ Encouragement Lacking or Poor

5. Conduct of Events: If deficient in any one of the four essentials listed below.

List the letter representing the event from 3 above

	PF TEST	PA TEST
1. Proper Essential Explanation and Demonstration	_____	_____
2. Vigorous Motivation	_____	_____
3. Strict Scoring	_____	_____
4. Close Supervision	_____	_____

6. Comments: _____

Figure 17. Physical fitness testing—a type inspection check sheet.

MASS GAMES & RELAYS
Inspection Check Sheet

Inspected by: _____ Date: _____
Unit Inspected: _____ Phase of Training: _____
Instructor: _____ PT Period: _____

1. Subject:

_____ Mass Games _____ Relays

2. Administrative Deficiencies:

_____ Area Inadequate _____ Equipment Not Organized or Not Available
_____ Area Needs to be Improved _____ Time Wasted in Organizing Class
_____ Court of Area Not Marked _____ Lesson Plan Not Present or Inadequate

3. Instructor Deficiencies:

_____ Voice Poor _____ Demonstrations Incorrect
_____ Class Control Poor _____ Enthusiasm Lacking
_____ Bearing or Appearance Poor _____ Supervision Poor
_____ Explanations Not Clear _____ Allowed Interest to Lag
_____ Explanations Incorrect _____ Officiating Poor

4. Unit Deficiencies:

_____ Attitude Improper _____ Inadequate Number of Assistants
_____ Execution Poor _____ No Command Supervision

5. Comments: _____

Figure 18. Mass games and relays—a type inspection check sheet.

87. Facilities and Equipment

a. Physical Training Instructor's Stand (fig. 19). Platforms are needed to elevate the instructor in order that men may maintain the formation and still see the instructor during the conduct of conditioning exercises. Such stands may be constructed locally.

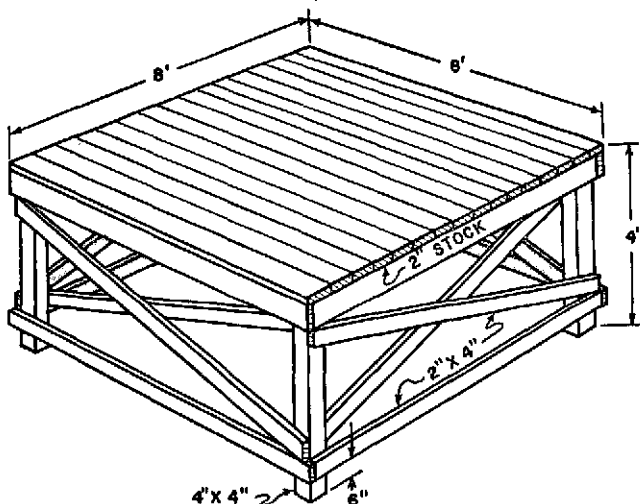


Figure 19. Physical training instructor's stand.

b. *Outdoor Area.* Such an area should be level and grassy. It should be well drained and ample in size for the unit. An area of this type can be used for many varied physical training activities.

c. *Logs and Rack.* Straight, smooth logs, free of bark and conforming to the specifications as listed in paragraph 55 should be available. A suitable rack for storage should be provided.

d. *Swimming Area.* An indoor pool is preferred for year-round use; however, the absence of an indoor pool should not hamper the program. Outdoor pools and approved swimming areas should be used to the maximum during the summer months.

e. *Physical Fitness Testing Facilities (TM 21-200).* For the physical fitness test, pull-up bars are

needed. For the physical achievement test, rope climb facilities are needed. The rope climb on the obstacle, "The Tough One," may be used if testing rope climb facilities are not available. Measuring boards are required for the triple broad jump event. A track is also needed for the 1-mile run and may be laid out on any level area.

f. Athletic Fields. For the athletic part of the program, some provision should be made to lay out permanent fields and courts if adequate space is available. Some areas can be constructed to provide for two or more games. For instance, basketball and volleyball may be played on the same area. Football, soccer, and speedball can be played on the same field with different markings. For dimensions of courts and fields, see TM 21-200.

g. Obstacle and Confidence Courses. The obstacle course is a nonstandardized course (par. 57). The choice of obstacles and construction will vary depending upon local terrain and materials available. The confidence course is more standardized and differs from the obstacle course in that it is not run against time (par. 58). The obstacles are usually higher and more difficult.

h. Equipment. Equipment needs should be anticipated and necessary items secured in time to insure proper conduct of the physical training program. Equipment usually is available through regular supply channels.

CHAPTER 6

PROGRAM PLANNING AND PROGRAM CONSTRUCTION

Section I. PLANNING

88. The Program

The Army physical training program is composed of two parts. The first of these is the on-duty program, consisting of the regularly scheduled hours of physical training devoted principally to the process of conditioning the soldier. The second is the off-duty competitive athletic programs. In this latter part of the program, the unit commander may receive help from special services. In no instance should he wait for help, as the absence or delay of either part of the program may result in the failure of his unit to successfully complete the physical training mission.

a. The On-Duty Program. The on-duty program consists of instruction in those conditioning activities and athletics designed to develop the strength areas of the body, desirable basic skills, and valuable selected traits. This program is regularly scheduled with definite time allotted for its conduct within the unit training schedule.

b. The Off-Duty Program. In most instances special services provide a program of off-duty athletic competition. There are two factors that limit the

program and create a gap that must be filled by the unit commander—

- (1) The problem of providing an opportunity for all personnel who desire to play. In company level leagues, only a few men from each company compete on the team representing the company. Within the company sized unit the commander can organize an intramural league utilizing platoons or squads as the competing units, thus providing more men an opportunity to participate.
- (2) The physical isolation of units that may occur from time to time. Such severance from established athletic facilities and specialists make athletic competition no less desirable.

89. Fundamental Elements

The physical training program should be authentic, practical, adequate, and organized.

a. Authentic. The content of the program should be tested, approved, and accurately presented. The Army program as outlined in TM 21-200 and in this text meets the first two requirements. The responsibility of accurate presentation is a unit responsibility.

b. Practical. In order to assure a practical program, consider the following elements:

- (1) *Needs of the troops.* Before a selection of activities can be made, a decision must be reached as to the immediate mission of a

particular unit. Physical training needs differ with the type of troops involved, their age, their physical condition, stage of training, and other local factors.

- (2) *Time available.* The time allotted for the program must allow for the completion of the objective and satisfaction of the basic needs. The allotment of time definitely affects the type of program to be planned.
- (3) *Facilities and equipment.* The administration of a suitable program is not dependent upon elaborate facilities. Many of the activities require no equipment or special facilities. The presence or absence of facilities and equipment will have some effect upon the planning of the program.
- (4) *Area and climate.* The terrain and the type of climate of the area govern the selection of the activities for the program. In areas where changes of climate are frequent, inclement weather schedules should be planned. The availability of suitable local terrain for the various activities and games must be considered in program and schedule construction.
- (5) *Other training.* Selection and scheduling of activities must be coordinated with other subjects. It is wise planning to note the amount and nature of other training activities before scheduling physical training hours.
- (6) *Objective.* The program must be planned in such a manner that the sustaining stage

is reached as rapidly as possible, and that this high level of conditioning is maintained.

- (7) *Instructors.* Trained instructors must be available.
- (8) *Command support.* The program cannot fully succeed without support of commanders at the various levels of command.

c. Adequate. To insure that the physical training program is adequate, the following elements must be considered:

- (1) *Conditioning.* The program must insure the conditioning of all personnel. Improvement of muscle tone, strength, muscular endurance, and circulo-respiratory endurance are essential.
- (2) *Program emphasis.* Correct planning will include elements that contribute to a well-balanced program. Proper content should provide opportunity for conditioning, variety, recreation, the development of skills, and desirable individual and team traits.
- (3) *Principles.* The program must be founded upon a sound basis with consideration for the important principles of overload and progression (TM 21-200).

d. Organized. To assure the success of the program, the following elements of organization are involved:

- (1) *Planning.* Advanced planning with attention to the physical training and unit mis-

sions, local objectives, selection of activities, scheduling, and anticipation of problems, will materially aid the chances of success.

- (2) *Scheduling.* A definite schedule results from timely and proper planning. This step in organization is necessary to insure that a written plan exists.
- (3) *Teaching.* Men must be instructed in physical training activities and athletics as in other training subjects. Provisions should be made within the program and within the activity for the instruction of those who are inexperienced or inept (TM 21-200).
- (4) *Conducting.* After all men are instructed in the proper technique and can respond in a given activity without need of further instruction, the teaching phase may be replaced by a process of leading or conducting the activity.
- (5) *Evaluating.* To keep a constant check on the condition of the troops and to evaluate the effectiveness of the physical training program, physical fitness tests should be administered every 3 or 4 months. From the results of these tests, coupled with visual inspection and evaluation of training tasks, the commanders can determine the progress of the troops in achieving physical fitness, as well as the level of fitness being maintained (ch. 11).

90. Training Policy

A sound on-duty program should conform to the following policy:

a. Commanders insure that leaders who instruct or conduct physical training activities understand and apply the important principles of moderate beginning, gradual progression, and overload. While the maximum benefit cannot be achieved from exercise without overloading the muscular and circulo-respiratory systems, caution must be used against excessive zeal during the early conditioning stages (TM 21-200).

b. Leaders plan physical training programs based upon the state of physical condition of their personnel. The human body improves or regresses in degree of physical condition in direct proportion to the amount and intensity of exercise. All personnel should understand the three stages of physical conditioning and be aware that poorly conditioned or unconditioned personnel must pass through the toughening and slow improvement stages before reaching the sustaining stage.

c. Field training contributes to the physical development of troops. Short speed marches are an excellent conditioning activity and should be used if possible when moving between training areas. Opportunities for concurrent physical training and a 10- or 15-minute period of physical training at the end of the training day, should be thoroughly exploited on those days when physical training is not scheduled, or when the training does not provide vigorous action.

d. In the selection of activities, commanders insure the use of those that best satisfy the requirements of the training mission, are suitable for the stage of physical conditioning of the majority of personnel being trained, adequate to reach the objectives, and provide variety to maintain interest.

e. Maximum use is made of competition in the physical training program to increase incentive and develop individual and unit pride. Provisions should be made for a system of suitable awards and presentations for outstanding performance and improvement.

f. The utilization of Saturday afternoons, twilight hours, and available indoor and outdoor facilities on a voluntary basis for the promotion of the company and battery commanders' intramural athletic program is essential. The company and battery commanders' intramural athletic program, aimed at 100 percent participation, requires planning, promotion, support, and actual supervision by unit officer personnel assisted by qualified noncommissioned officers. Sports programs, schedules, equipment, and facilities furnished through special services assist commanders in attaining the desired participation. To achieve and maintain the maximum benefits of this program, it is essential that close coordination be maintained between the physical training and special services sports activities.

g. Commanders evaluate the physical status of their command to determine if personnel are being prepared in accordance with the physical training mission. Personnel physically unendowed are en-

couraged to meet the average physical performance standards of the group. Various methods are available for the practical evaluation of physical condition by the commander.

91. Types of Programs

The aim of physical training (TM 21-200) is the same for all units, but the objectives may vary slightly due to factors that are peculiar to the unit. Generally, training may be grouped as follows:

- a. Individual.
- b. Unit.
- c. Specialist and staff personnel.

d. Oversea replacement stations and aboard ship. A physical training program will be conducted at personnel oversea replacement stations and aboard ships (ATP 21-113, 21-186).

92. Maintaining Physical Fitness

a. It is almost impossible to maintain a high degree of interest and enthusiasm over a long period of time if the activities are predominantly conditioning exercises, guerilla exercises, and grass drills. The most effective method of maintaining interest in the physical fitness program during the sustaining stage is to provide a variety of competitive and athletic activities. See chapter 10 and TM 21-200.

b. Conditioning exercises, grass drills, and guerilla exercises should be included in the program during the maintenance period, but to a lesser extent. These activities provide a warmup for the sports and games, and, in addition, reach certain

muscle groups which may not be exercised by the athletic activities. Soldiers respond well to 10 or 15 minutes of conditioning activities if they can later devote 35 to 40 minutes to sports and games.

c. The athletic activities used should be of the most vigorous type. Such sports as American ball, soccer, speedball, keep-away, cage ball, basketball, goalhi, push ball, and other similar activities are recommended. Games such as softball, volleyball, and shower ball should not be used during the toughening and slow improvement stages of the physical training program because they are not sufficiently strenuous. Football is an excellent game for well-conditioned men but it does not lend itself to use during the on-duty program because it requires a large amount of equipment. Six- and nine-man touch football, however, is excellent and should be utilized (ch. 10).

Section II. PROGRAM CONSTRUCTION

93. Training Estimate

a. An estimate of the training situation should be made prior to the development of any plan of action. After this plan of action is selected, the next important step is the development of a unit training "program" (programs for various phases of training may be found in chapters 7, 8, and 9). The program is further developed into a "training schedule" from which specific "lesson plans" are made for instructional purposes. Supervision must be provided to maintain specific standards of achieve-

ment. This pattern holds true in physical training as in any other subject that must be taught.

b. The physical training estimate should include—

- (1) Mission—designated by aim and objectives.
- (2) Essential subjects—set conditioning drills, supplementary activities, mass games and relays, confidence and obstacle courses, team athletics, swimming, and posture.
- (3) Time available—as specified in the particular ATP applicable to the unit, or as determined by the commander.
- (4) Instructor personnel needed—at least one trained man per platoon.
- (5) Miscellaneous considerations—local conditions, climate, terrain, traditions.

94. Action Following Training Estimate

a. *General.* When the estimate has been completed, the next step in planning is the development of a physical training program.

- (1) A program is a flexible plan, in tabular form, covering the entire training cycle. It lists the activities to be used and the time allotted for each activity. Considerable thought should be placed on the program preparation as the schedule is developed from it.
- (2) The individual responsible for planning should construct his program around Drill One and running. These two activities

constitute the core of the program (fig. 20). As progression takes place and as the sustaining stage is reached, other activities are to be added (fig. 21).

- (3) The actual writing of a program requires a selection of activities to be made and a decision as to the amount of time to be devoted to each activity. For an example of a master program, see tables I and II.

b. *Physical Training Schedules.* A schedule is a detailed plan, in tabular form, covering a 1 or 2

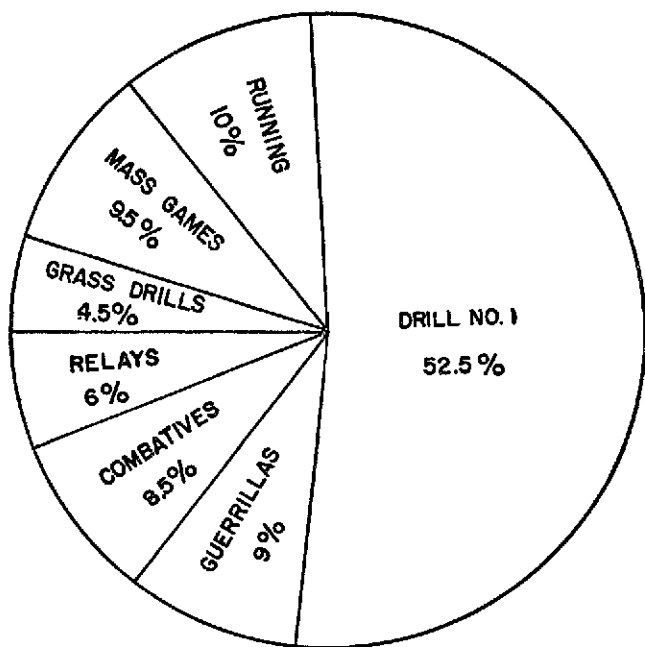


Figure 20. Core activities.

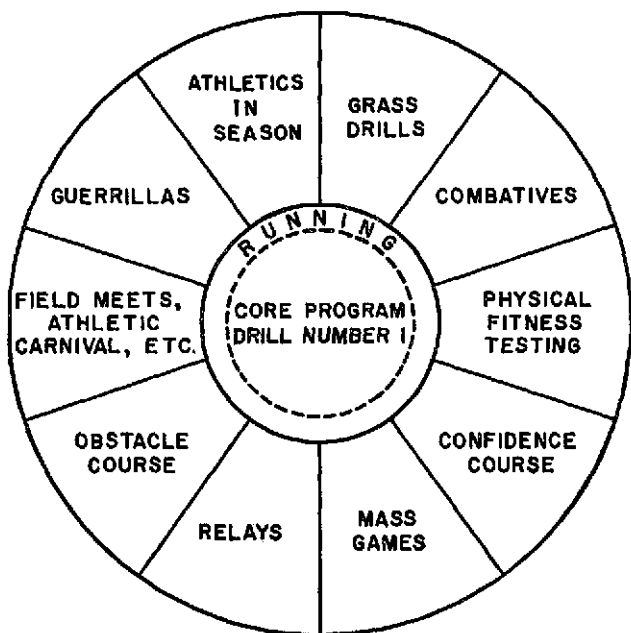


Figure 21. Sustaining activities.

week period, which lists the hour, unit, place, subject or lesson title, references used, and instructors assigned. It is from these detailed schedules that specific plans are written for each lesson taught. Daily sample schedules have been developed to illustrate this point and are included in tables III, IV, and V.

c. Physical Training Lesson Plans. A lesson plan is a written detailed outline which covers every element of the lesson being taught. It is normally used as the instructor's guide for presentation (FM 21-6).

Table I. Master Physical Training Program

40 Hrs

Schedule	Monday	Min	Tuesday	Min	Wednesday	Min	Thursday	Min	Friday	Min
1st Wk	Drill One Running	40 10	Drill One Running	40 10	Drill One Running	40 10	Drill One Running	40 10	Drill One Grass Drill Relay	30 16 10
2d Wk	Drill One Grass Drill Running	30 10 10	Drill One Combatives Relay	30 15 05	Drill One Combatives Running	30 15 05			PF Test	100
3d Wk	Drill One Guerillas Mass Games	20 15 15			Drill One Guerillas Relays	20 15 15			Drill One Grass Drill Running Rope Climb	20 05 10 15
4th Wk			Drill One Combatives Mass Games	20 10 20			Drill One Guerillas Running Pull-Ups	20 10 10 10		
5th Wk	Drill One Mass Games Running	20 20 10			Drill One Obstacle &/or Con- fidence Course	20 30			Drill One Combatives Relays	20 15 15

6th Wk			Drill One Guerillas Combatives Relays	20 10 10 10			Drill One Grass Drill Mass Games	20 05 25		
7th Wk	Drill One Grass Drill Combatives Relays	20 05 05 20			Drill One Obstacle &/or Con- fidence Course	20 30				
8th Wk			Drill One Guerillas Mass Games	20 10 20			Drill One Grass Drill Mass Games	20 05 25		
9th Wk	Drill One Athletics (In Season)	20 30			Drill One Obstacle &/or Con- fidence Course (Time)	20 30				
10th Wk			Drill One Athletics (In Season)	20 30			Drill One Grass Drill Athletics (In Season)	20 05 25		

Table I—Continued.

40 Hrs

Schedule	Monday	Min	Tuesday	Min	Wednesday	Min	Thursday	Min	Friday	Min
11th Wk	Drill One Combatives Guerillas Running	20 10 15 05					Drill One Athletics (In Season)	20 30		
12th Wk			Drill One Grass Drill Combatives Relays	20 10 10 10					Drill One Athletics (In Season)	20 30
13th Wk	Log Exer- cises Athletics (In Season)	25 25			Log Exer- cises Athletics (In Season)	20 30				
14th Wk			Log Exer- cises Athletics (In Season)	20 30			Log Exer- cises Athletics (In Season)	20 30		

15th Wk					Log Exercises Relays Running	20 15 15			PF Test	100
16th Wk				Athletics Carnival &/or Field Meet	50					

Table II. Recapitulation Time Allotment Physical Training Program

Unit_____		40 Hrs																	
Physical training activities		Weeks of training																	
		1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	Total Minutes	
Drill One		190	90	60	40	60	40	40	40	40	40	40	40	40					720
Log Exercises														45	40	20			105
Running		40	15	10	10	10						05				15			105
Guerillas				30	10		10		10			15							75
Grass Drill		10	10	05			05	05	05		05		10						55
Combatives			30		10	15	10	05				10	10						90
Mass Games				15	20	20	25		45										125
Relays		10	05	15		15	10	20					10			15			100
Athletics													10						260
PFF Test			100							30	55	30	30	55	60	100			200
Special Activities				15	10														75
Obstacle or Confidence						30		30		30							50		90
		250	250	150	100	150	100	100	100	100	100	100	100	100	100	150	50		2000

Table III. Physical Training Schedule

Co A, 2d Bat Gp, 87th Inf Unit
236 EM—7 Off

First-----
Week

Day	Time	Unit	Place	Uniform	Subject or lesson titles	Instructor	References
Mon	0800	Co.	PG-1	D	Basic Drill One	Fox & Pace	TM 21-200: ch. 4
	0840				Rectangular Formation		TM 21-200: par. 40
	0840	do	do	do	Teaching Ex 1-4		TM 21-200: par. 53a-d
	0850				Formation Running		TM 21-200: par. 73
Tue	0800	Co.	PG-1	D	Basic Drill One	Pace & Quinn Pace & Quinn	TM 21-200: ch. 4
	0840				Rectangular Formation		TM 21-200: par. 40
	0840	do	do	do	Teaching Ex 5-8		TM 21-200: par. 53a-h
	0850				Formation Running		TM 21-200: par. 73
Wed	0800	Co.	PG-1	D	Basic Drill One	Quinn & Banks Quinn & Banks	TM 21-200: ch. 4
	0840				Rectangular Formation		TM 21-200: par. 40
	0840	do	do	do	Teaching Ex 9-12		TM 21-200: par. 53a-l
	0850				Formation Running		TM 21-200: par. 73

Table IV. Physical Training Schedule

Second-----Week

Co A, 2d Bat Gp, 87th Inf Unit
236 EM—7 Off

Day	Time	Unit	Place	Uni- form	Subject or lesson titles	Instructor	References
Thur	0800	Co.	PG-1	D	Basic Drill One	Pace & Quinn	TM 21-200: ch. 4
	0830				Rectangular Formation		TM 21-200: par. 40
	0830	do	do	do	12 Ex - 6 Rep	Banks	TM 21-200: par. 53
					Guerillas		TM 21-200: ch. 6 Sec V
					1. All Fours		TM 21-200: par. 86a
					2. Duck Waddle		TM 21-200: par. 87a
					3. Chicken Walk		TM 21-200: par. 87b
					4. Bear Walk		TM 21-200: par. 86b
	0835	do	do	do	Relays	Fox	TM 21-200: ch 9
	0850				1. Pilot Relay		TM 21-200: par. 114m
					2. Hold it.		TM 21-200: par. 114e
					3. Back Support		TM 21-200: par. 115b

Fri	0800	Co.	PG-1	D	Physical fitness test 1. Pull-Ups 2. Squat Jumps 3. Push-Ups 4. Sit-Ups 5. 300-yd Run	Banks, Fox, Pace & Quinn	TM 21-200: ch. 11 TM 21-200: par. 176a TM 21-200: par. 176b TM 21-200: par. 176c TM 21-200: par. 176d TM 21-200: par. 176e
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Table V. Physical Training Schedule

Sixth-----Week
 Co A, 2d Bat Gp, 87th Inf Unit
 236 EM--7 Off

Day	Time	Unit	Place	Uni- form	Subject or lesson titles	Instructor	References
Tue	0800	Co.	PG-1	D	Basic Drill One Rectangular Formation 12 Ex - 11 Rep	Quinn	TM 21-200: ch. 4
	0820						TM 21-200: par. 40
	0820	do	do	do	Guerillas	Fox	TM 21-200: par. 53
							TM 21-200: ch. 6, Sec V
	0830	do	do	do	1. Lame Dog	Pace	TM 21-200: par. 86c
							TM 21-200: par. 86f
	0830	do	do	do	2. Crab Walk	Pace	TM 21-200: par. 86d
							TM 21-200: par. 86g
	0830	do	do	do	3. Indian Walk	Pace	TM 21-200: ch. 6, Sec IV
							TM 21-200: par. 81f
	0840	do	do	do	4. Inch Worm	Pace	TM 21-200: par. 81c
							TM 21-200: par. 81b
					Combatives		TM 21-200: par. 81d
					1. Back to Back		
					2. Rooster Fight		
					3. Hand Wrestle		
					4. Indian Wrestling		

	0840 0850	do	do	do	Relays 1. Squad Front 2. Circle 3. Chariot	Banks	TM 21-200: ch 9 TM 21-200: par. 114 <i>o</i> TM 21-200: par. 114 <i>c</i> TM 21-200: par. 115 <i>e</i>
Thur	0800 0820 0820 0825	Co.	PG-1	D	Basic Drill One Rectangular Formation 12 Ex - 12 Rep Grass Drill 1. Stop-Go 2. Front-Back 3. Bicycle 4. Rocker 5. Bouncing Ball Mass Games 1. Push Ball 2. Dodge Ball	Pace Quinn Fox	TM 21-200: ch. 4 TM 21-200: par. 40 TM 21-200: par. 53 TM 21-200: ch. 66, Sec III TM 21-200: par. 77 <i>a-b</i> TM 21-200: par. 77 <i>c-d</i> TM 21-200: par. 77 <i>g</i> TM 21-200: par. 77 <i>k</i> TM 21-200: par. 77 <i>l</i> TM 21-200: ch. 8 TM 21-200: par. 106 <i>p</i> TM 21-200: par. 106 <i>g</i>

CHAPTER 7

PROGRAM FOR INDIVIDUAL TRAINING

95. General

a. Individual training is characterized by a fixed time allotment and a standardized program of conditioning. This program is prescribed by current ATP's. The training prescribed is vigorous and progressive and, coupled with other types of military training received during this period, should result in well-conditioned replacements. The physical training mission for individual training is to develop in the recruit a level of physical fitness high enough to facilitate his performance of duty as a replacement for the unit, or specialist assignment.

b. The instructions outlined in this chapter are applicable to the basic combat and advanced individual training phases.

96. Activities

a. Drill One. The core of this conditioning program in individual training is drill one, "The Army Dozen." Commanders should also exploit the advantages of drill one on those days when physical training is not listed on the training schedule.

b. Running. Running as an essential of the conditioning program because trainees are usually deficient in circulo-respiratory endurance.

c. Guerilla Exercises. These exercises are ex-

tremely vigorous, big muscle activities executed in continuous fashion involving major changes in body position. Ten minutes of the hour devoted to guerilla exercises should be adequate, as they are exceedingly strenuous.

d. Grass Drill. Grass drill develops muscular endurance and agility.

e. Combatives. Dual and team combatives employ one man against the other, or team against team.

f. Mass Games and Relays. These activities are included in the schedule for their value in developing circulo-respiratory endurance.

g. Swimming. Where facilities now exist and weather conditions permit, all non-swimmers should be given special instruction with the minimum requirement to pass the beginners' (C) test. For these requirements, see TM 21-200.

97. Concurrent Physical Conditioning

a. Value of Other Training. Valuable physical conditioning is derived from the more vigorous phases of training in such basic military subjects as squad tactical training, scouting and patrolling, technique of fire, close combat, and marches and bivouacs. These phases of individual and squad field training should be thoroughly exploited to add to the all-round physical conditioning of the individual trainee. In addition, movement to and from training areas can be used to good advantage by double timing, speed marching, or a combination of both. Definite procedures should be established as control

measures, and are best accomplished in the division or training center standard operational procedure on concurrent physical conditioning.

b. Posture Training. This training is placed under concurrent training because good posture is not confined to a few minutes instruction during a day's training, but is a constant factor during every minute of the training day, whether standing, walking, or sitting (TM 21-200).

98. Scheduling

a. The physical training subject schedules for individual training will furnish valuable assistance to the training officer in integrating physical training into the master training schedule. Lesson plans for the hours allotted are contained in the subject schedules and should be of assistance to the instructor. As an additional guide, the following points should be considered:

- (1) Those units whose current ATP schedules more than the hours shown in the subject schedule, should add lesson plans as required. Use the first 15 minutes of each period for 12 repetitions of each exercise of drill one; the next 25 minutes of supplementary activities described in TM 21-200, and complete the period with 5 minutes of some type of running.
- (2) Where possible, the first 10 hours of physical training should be scheduled during the first two weeks in single period blocks of instruction.

- (3) The time of day for training is unimportant except for the hour immediately following the morning and noon meals. Some units have initiated "before breakfast" physical training over and above the regularly allotted hours. If scheduled, this period should not exceed 15 to 20 minutes of not too vigorous activity, terminating at least 30 minutes before breakfast.
- (4) If the commanders desire additional short periods of physical training, the short 15-minute periods of drill one should be given during the mid-morning or mid-afternoon break or at the end of the training day.
- (5) After the first 10 hours of the allotted physical training time have been scheduled, it is best to schedule the remaining hours on those training days when there are particularly light physical demands on the soldier.

b. The hours allotted to physical training are considered to be the minimum, and any lost hour seriously affects the progression necessary to the program. The tendency to call off physical training due to inclement weather should be held to a minimum. Since the program can be conducted anywhere, full use should be made of hard surface and black-top areas when the ground is wet.

99. Operation of the Program

a. This program is designed to make the most of the limited time allotted to physical training. The subject content is sound and adheres to accepted

current concepts of physical conditioning. The effectiveness of the instruction outlined in this section depends upon its leadership. Available physical training instructor material (officer or noncommissioned officer) should be carefully screened before assignment.

b. The pipeline offers an excellent source for physical training instructors. Many trainees have physical education background training. The soldier who has an athletic participation record usually makes a good physical training instructor. The committee system conserves trained instructors and better utilizes those available. It is recommended that the committee system be employed whenever feasible. Proper assignment and utilization of trained officers and enlisted men will materially improve the caliber of physical training. For additional information on the preparation of instructors, see chapter 5.

CHAPTER 8

PROGRAM FOR UNIT TRAINING

Section I. INTRODUCTION

100. General

a. With certain modifications, the activities used during individual training are applicable to unit training. Modifications include supplementary type activities and the addition of more competitive team activities and athletics. Examples are the reduction, but not the elimination, of mass games and grass drill and the addition of vigorous sports, field meets, and athletic carnivals.

b. Unit programs discussed in the remainder of this chapter apply to units up to and including the division.

101. Maintaining Physical Conditioning

a. When the soldier completes individual training and is assigned to a TOE unit, the unit training program is applicable. If he is assigned as a specialist or a technician in an administrative capacity, the program for specialists and staff personnel is applicable. This chapter is concerned with preparation of programs for unit training. For general program planning, see chapter 6.

b. Upon assignment to a unit, the individual generally has reached the latter part of the slow im-

provement stage of conditioning. Therefore, during the early part of unit training, he normally reaches the sustaining stage of conditioning. Once this high level of physical fitness is reached, the emphasis in physical conditioning is on a different type of program. The program should be designed to insure that this high level of physical condition is maintained.

102. Scheduling

a. The missions of TOE units are so varied that difficulties are encountered in scheduling the allotted time prescribed for physical training in Army Training Programs. The physical training program cannot be abandoned because of scheduling difficulties, the need of scheduling other military subjects, or because of the type of military training in which the unit is engaged. It must be constant and regular throughout the year. Only through regular and vigorous exercise will the individual improve his level of fitness and maintain his present level. Once he ceases to engage in regular exercise, his level of fitness lowers progressively. The task for the unit then becomes one of planning and executing a program of vigorous and regular exercise designed either to improve the level of physical fitness or to maintain the level reached in individual training.

b. Types of military training involving walking, running, and climbing undertaken during unit training contribute to a high level of physical fitness. General military training alone, however, is not sufficient. A program of regular exercise, coupled with the beneficial conditioning aspects of

general military training, insures a high level of physical fitness for the unit.

103. Testing

To aid in measuring and evaluating unit physical fitness, some form of physical fitness testing should be used. It is recommended that combat type units evaluate and measure certain physical combat skills or achievements through the use of the physical achievement test (TM 21-200).

Section II. SELECTION OF ACTIVITIES

104. Drills and Exercises

a. Drill One. This drill remains as the principal part or the "core" of the program. About 50 percent of the time allotted to set drills should be spent in the conduct of drill one.

b. Other Conditioning Exercises. The remaining 50 percent of the time should be divided between drill two, rifle exercises, and log exercises. Drill two are vigorous exercises with added stress on coordination. Rifle exercises are much the same as drills one and two, with the addition of exercise against resistance. Log exercises employ this same principle of resistance on a team basis, with the added element of cooperation and teamwork.

c. Running. This activity remains an essential part of the program. Stress should be on endurance, and longer distances should be employed.

d. Other Supplementary Exercises. Guerilla exercises, grass drills, combatives, mass games, and

relays should continue to be used as in individual training, but in reduced amount.

e. Swimming. There will be men who failed to learn to swim during individual training. They should be given instruction that will enable them to pass the beginners' (C) test (TM 21-200).

f. Athletics. All personnel should be given instruction in, and participate in, at least one vigorous seasonal sport per season. Additional instruction and playing of other sports is desirable if time permits.

g. Meets and Contests. For variety and to test skill, larger meets and contests should be scheduled during this phase of training. The use of relays and games with 100 percent participation of all units stimulates competition and morale, and helps to foster unit solidarity. For information about organization and conduct of the athletic carnival, see chapter 10.

h. Obstacle Courses. Negotiation of the obstacle course contributes to the development of strength, endurance, agility, and coordination. It also develops military skills such as crawling, creeping, climbing, walking, running, and jumping.

i. Concurrent Physical Conditioning. Much valuable benefit can be derived from the individual and unit technical training in concurrent physical conditioning. Posture training must continue during unit training and is placed under concurrent training for the same reasons as specified in paragraph 97.

105. Administration and Leadership

The number of hours allotted to unit training depends upon the type of unit and mission. In planning and scheduling, operations and training personnel should follow the suggestions in this section and adhere to the principles outlined in chapter 6. Also see TM 21-200. In addition, the following factors should be considered:

a. The principal objective is conditioning. Do not include activities in the program that fail to make maximum use of the allotted time.

b. Variety must be provided in the use of conditioning exercises (set drills).

c. Any scheduled athletic activity or game should not be considered as free play time. Activities of this type are to be planned and well organized with a minimum of lost time. Instruction is to be offered, when necessary, to insure satisfying participation for all personnel. Only team sports that contribute to the objective are to be used (chs. 4 and 10).

Section III. PHYSICAL FITNESS ABOARD SHIP AND IN COMBAT AREAS

106. Shipboard Activities

a. At the conclusion of the individual or unit training programs, personnel or units may be moved aboard ship to oversea stations or to combat areas. If they are given no exercise en route, they lose much of the high level of physical condition they had upon embarkation. Many successful physical training programs have been carried out on trans-

ports in spite of acute space limitations. Under these circumstances set drills appear to be the best type of activity as a small space can usually be cleared. (Resistance exercises have also been successfully employed.) Stationary running for periods up to five minutes will take the place of ordinary running. If space is adequate, stationary grass drills may be used. Some transport programs have even included crude obstacle courses. By scheduling the available facilities for 1/2-hour intervals, it is possible to provide an activity period for most men.

b. Table VIII illustrates a sample program that may be used aboard ship. Activities are not restricted to those listed in the table. Since these periods are limited to 30 minutes, participation in the activities on a daily basis is desirable. Twelve periods are indicated, but additional periods may be prepared in a manner similar to those outlined in the table.

c. Instructors selected to conduct the conditioning exercises should be required to prepare lesson plans prior to conducting the exercises. They should be briefed on the following points:

- (1) Location for conduct of exercises.
- (2) Scope of each period.
- (3) Frequency and the time of day periods are to be conducted.
- (4) Limitations on activities for safety and prevention of injury.
- (5) Approximate number of men that will participate in the exercises.

- (6) Rewards, if any, for winners in competitive events; for example, excusing the winning squad from a certain duty for that day.
- (7) Uniform to be worn for physical training periods.
- (8) Location and method of obtaining equipment needed.

107. Combat Areas

a. A high level of physical fitness is important when soldiers are in combat. However, this is a difficult time to maintain physical condition, so emphasis must be placed on rebuilding lost condition when troops are withdrawn to the rear for periods of rest and rehabilitation.

b. Table IX illustrates a sample recapitulation table that may be used when troops are placed in rear areas for rest and further training. Activities to be used are not limited to those listed. Activities selected must be vigorous to insure progressive development and maintenance of a high level of physical fitness.

Table VIII. Recapitulation—Activity and Time Allotment—12 Period Training Program
 PHYSICAL TRAINING ABOARD SHIP

Periods of exercise	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	Fre- quency of activity
	Time in Minutes												
Drill One*	20		20		15		15		15		15		6
Rifle Exercise**		20		20		15		15		15		15	6
Grass Drills		5		5			5			5		5	5
Stationary Running		5		5					5		5		5
Relays***	10		10		15		10	15	10	10	10	10	10
Total time (Minutes) each pe- riod	30	30	30	30	30	30	30	30	30	30	30	30	
Repetitions of set drills	8	8	9	9	10	10	11	11	12	12	12	12	

* Substitute exercises 4a and 8a for exercises 4 and 8 when decks are wet or otherwise unsuitable.

** Units not armed with the rifle conduct Drill One when rifle exercises are scheduled.

*** Select only crawling and carrying type relays and establish competition between squads and platoons.

Table IX. Recapitulation—Activity and Time Allotment—12 Period Training Program
PHYSICAL TRAINING IN COMBAT AREAS UNIT TRAINING

Periods of exercise	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	Fre- quency of activity
	Time in Minutes												
Drill One	20	20	20		15		15		15		15		7
Running*	5	5	10		10		10		10		10		7
Grass Drill	5				5				5				3
Combatives			5				5				5		3
Mass Games**	15		15				15		15		15		4
Relays		20			15								3
Athletics***				45		45		45		45			5
Total time (Minutes) each pe- riod	45	45	45	45	45	45	45	45	45	45	45	45	
Repetitions of set drills	6	7	8		8		9		9		10		

* Use 5-minute periods of sprint running. Use combination of sprints and distance running for 10-minute period.

** Consider for use only the mass games that equipment is available for.

*** If swimming facilities are available, alternate athletic periods with swimming.

CHAPTER 9

PROGRAM FOR SPECIALISTS AND STAFF PERSONNEL

Section I. INTRODUCTION

108. Personnel Affected

a. Personnel normally are assigned specialized duty sometime during their military service. Included in this group are instructors at service schools, staff officers, technicians, specialists, and other personnel assigned to T/D type organizations who perform duty only in an administrative or sedentary capacity. Personnel in this specialized group differ from personnel in individual and unit training in that the duty usually performed is under the direct supervision of someone other than their unit commander.

b. Personnel serving in these specialized areas should develop and maintain a level of physical fitness commensurate with that required for field or combat duty. To do so they must participate in a regular, year-round, physical training program. Because the specialist and staff type duty normally demands little or no muscular activity, it is usually not conducive to a high level of conditioning.

109. Planning and Supervision

a. The physical training program for specialists

and staff personnel should be planned, organized, supervised, and conducted on a controlled basis. The theory that all individuals develop and maintain a desirable level of physical fitness on their own initiative is unrealistic and fallacious. The activities selected by most individuals (recreational types such as bowling and golf) fail to accomplish the objective because they do not include the important principles of overload and progression.

b. An effective physical training program for specialists and staff personnel contains activities suitable for *all* age groups. These activities must contribute to the progressive development and maintenance of strength, muscular and circulo-respiratory endurance, agility, coordination, and at the same time provide for progression and overload. In this respect, the program should not differ from that prescribed for individual and unit training. The major difference is the degree of intensity in which the program is conducted.

Section II. SELECTION OF ACTIVITIES

110. Considerations for Proper Selection

Because specialized personnel usually represent all age groups and all stages of physical condition, it may be necessary to operate several separate groups during this phase of training. Personnel participating in this program may represent both extremes of experience and physical condition. On the one extreme may be the clerk, recently assigned to the unit after eight weeks of individual training; on the other extreme is the instructor who has had

10 years of experience and training. Eventually all men may be brought together for the same dosage and the same progression, but good judgment must be used to determine these two factors in the initial stages of the program.

111. Activities

Some activities must be selected to raise the level of physical fitness for personnel who are in poor physical condition, while other activities must be selected to maintain the high level of physical fitness of personnel who are in excellent physical condition. It will be necessary for personnel in poor condition to again pass through the toughening and slow improvement stages. Personnel who are in excellent condition must be maintained in the sustaining stage. When personnel are in the latter part of the slow improvement stage, log exercises, rifle exercises, drill two, and athletics may be introduced to add variety and interest. While these activities are being introduced, the time devoted to the set drills, grass drill, guerilla exercises, and running may be reduced somewhat, but not eliminated.

a. Activities for the Toughening Stage.

- (1) *Drill one*
- (2) *Grass drill*
- (3) *Guerilla exercises*
- (4) *Combatives*
- (5) *Relays*
- (6) *Mass games*

b. Activities for the Slow Improvement Stage.

- (1) *Drill one*

- (2) *Drill two*
- (3) *Log exercises*
- (4) *Rifle exercises*
- (5) *Grass drill*
- (6) *Guerilla exercises*
- (7) *Combatives*
- (8) *Relays*
- (9) *Mass games.*
- (10) *Athletics*

c. Activities for the Sustaining Stage. The activities outlined for use in the latter part of slow improvement stage also apply to the sustaining stage. In addition, athletics may be used more frequently with a further reduction of the set drills, running, grass drill, and guerilla exercises. Swimming may also be used intermittently. If sufficient personnel are available, athletic meets and contests are appropriate for this stage.

Section III. ADMINISTRATION AND LEADERSHIP OF THE PROGRAM

112. Scheduling

a. Frequency and Time of Day. An organized scheduled period of physical training three times weekly should be adequate to meet the objective. Physical training should not be scheduled one-half hour before or within 1 hour after meals.

b. Organization.

- (1) Personnel over 40 years of age should remain as one group throughout. Personnel

under 40 years can be classified by observation and physical fitness test results. The following guide is suggested for the initial separation of these groups:

- (a) Personnel over 40 years of age.
 - (b) Personnel under 40 years of age who are in poor condition.
 - (c) Personnel under 40 years of age who are in good or excellent physical condition.
- (2) Organizational arrangement should be a consideration in scheduling. For example, it may be necessary to schedule the same conditioning period a number of times during the day to enable all personnel of a section to participate without interrupting normal duty functioning of that section. The number of instructors available, however, limits the number of times that conditioning periods may be scheduled. The last period of the day may be utilized for physical conditioning purposes. This permits personnel to go to their quarters to shower and change clothes upon completion of the conditioning period.
- (3) Planning of physical training programs for specialists and staff personnel should be centralized. Responsibility for execution of the program may or may not be centralized. It is suggested that small installations exercise centralized control. At larger installations execution of the program may be decentralized down to sec-

tions. For example, an Adjutant General's Section at a large installation can be furnished a copy of the physical training program, but it would be the responsibility of the section chief to provide the instructors, to coordinate times of the day, and to segregate groups for the conditioning period.

113. Program for Personnel Over 40 Years of Age

a. To develop and maintain a satisfactory degree of physical fitness, it is necessary that personnel over 40 years of age participate in vigorous activities. There are, however, certain considerations in planning and conducting a conditioning program for this group. Table X is a sample guide for the selection of activities and scheduling of the conditioning period. This table illustrates the principles of moderate beginning and progression, acceptable combinations of conditioning activities, time to be devoted to each activity, and total time to be spent on actual conditioning during each period. Additional periods are to be scheduled that provide for progression and overload.

b. The conditioning periods to include organized athletics should be scheduled at least three times per week. The athletic activity, in addition to providing a good "workout," should facilitate control, group participation, and supervision. If additional time is available, schedules may provide for participation in recreational activities such as golf and bowling. This added participation should be at the option of the individual and on an informal basis.

c. Before the program is started, personnel should receive a physical examination to include a cardiograph check. Once the program begins, it should be characterized by moderate beginning, slower progression than for younger age groups, and sufficient "warmup" before participation in the more vigorous exercises.

114. Program for Personnel Under 40 Years of Age in Poor Physical Condition

a. The program for personnel in this group should be essentially the same as that prescribed for personnel in individual training (ch. 7) who must pass through the toughening and slow improvement stages of conditioning. The major difference is in the rate of progression. Personnel in this specialized category do not have the opportunity for concurrent physical conditioning that is provided in individual or unit training. Progression, therefore, must be slower. Table XI is a sample guide for the preparation of a program for this group. Note that it does not include athletics or swimming. These activities are excluded because this group must first pass through the toughening and slow improvement stages of conditioning. Athletics and swimming should not be included until the group approaches the sustaining stage.

b. The conditioning periods should be scheduled at least 3 times per week, although 4 to 5 periods a week initially is desirable. Upon completion of approximately 10 weeks of conditioning, a physical fitness test should be administered. Personnel who have achieved a satisfactory level of fitness should

then join a group who are in better physical condition. Personnel who have not achieved a satisfactory level should continue with a basic conditioning program until a satisfactory level is reached.

115. Program for Personnel Under 40 Years of Age in Good Physical Condition

a. Specialists and staff personnel who have achieved a high level of physical fitness are considered to be in the sustaining stage of conditioning. This group should be given a program different from that required for the poorly conditioned group. Table XII is a sample guide for the preparation of a program for this group. This program differs from that prescribed for the group in poor physical condition (par. 114), by the addition of other set conditioning drills, athletics, and swimming to stimulate interest in the program. It includes a reduction in the time devoted to the purely conditioning activities and an increase in time devoted to mass games, relays, athletics, and swimming. Although the conditioning time is reduced, these activities should not be eliminated from the program entirely. Athletics selected for this group should be vigorous and limited to those outlined in chapter 4. Physical fitness tests should be administered periodically to determine if a satisfactory level of physical fitness is being maintained.

b. To maintain a high level of physical fitness for this group, conditioning periods should be scheduled three times weekly.

116. Conditioning Programs When Time and Space Are Limited

a. Normally a physical conditioning period is of 45 minutes duration. Shorter periods are not recommended, but there may be situations where less time will be allocated for conditioning specialists and staff personnel. Table XIII illustrates a sample program where conditioning time is limited to 30 minutes. A program of this nature limits the variety of activity. More time is to be devoted to the set conditioning drills, running, and grass drill, and less time to relays and mass games, which are more interesting and enjoyable but have less conditioning value. Athletics and swimming should not be included in a program when time is limited.

b. Personnel of this type may be billeted within the confines of a city or at installations where exercise area is limited. It then becomes necessary to prepare a physical training program that will fit this situation. Table XIV illustrates activities, time allotment, and progression for this type of program. The program should not be limited to the activities listed on the table. For example, drill two, log exercises, and rifle exercises can be conducted in the same amount of area as drill one. The local situation determines what activities may be selected. If an indoor track is available, distance running may be added as an additional activity to those listed in table XIV.

Table X. Recapitulation—Physical Training Program for Specialists and Staff Personnel Over 40 Years of Age.

Periods of exercise	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	etc	Frequency of activity
	Time in minutes																	
Type of activity																		
Drill One	40	40	35	35	30	30	25		25	25	20		20	20				12
Running*																		
Roadwork				5		10				10								3
Double Time	5	5							10				15					4
Guerilla Exercises				5		5			10	10			10					5
Swimming																		1
Athletics**																		2
Distance			10		15		20	45				45					45	5
Walking***																		
Total time (Minutes)	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45			
each period.																		
Repetitions of set drills	3	3	3	4	4	4	4	4	5	5	5		6	6				

* The type of running indicated should be a combination of running and walking for the amount of time specified. Progress by increasing running time and reducing the walking time.

** Athletics selected must contribute to improving and maintaining physical condition. They should also provide for ease of control and supervision.

*** Walking should be brisk and at the rate of 110 to 120 steps per minute.

**Table XI. Recapitulation—Physical Training Program for Specialists and Staff
Personnel Under 40 Years of Age in Poor Physical Condition**

Periods of exercise	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	etc	Frequency of activity
Type of activity	Time in minutes																	
Drill One	30	30	30	25	25	25	20	20	20	20	20	20	20	20	15			15
Running*	5	5		10			10	10	15		5	15			15			4
Double Time										5			5					4
Road Work										5				5				4
Sprinting			5		5													4
Grass Drill		10				5												4
Guerilla Exercises	10			10							10							3
Combatives			10						10			10						3
Mass Games											15				15			5
Relays					15		15			15			20					4
Total time (Minutes)	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45		
each period.																		
Repetitions of set drills	5	5	5	5	6	6	6	6	7	7	7	7	8	8	8			

Note. Use initial period of each activity to teach correct execution of the activity.

* Combine walking with running when double timing and road work. Allow short rests between wind sprints. Progress by reducing walking and increasing running time. Progression in wind sprinting may be achieved by increasing the distance to sprint and by reducing the rest between wind sprints.

*Table XII. Recapitulation—Physical Training Program for Specialists and Staff
Personnel Under 40 Years of Age in Good Physical Condition*

Periods of exercise	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	etc	Frequency of activity
Type of activity	Time in minutes																	
Drill One	20	15	15				15			15	15		15					6
Drill Two				20					15									2
Rifle Exercises					20									15				2
Log Exercises						20		15										3
Running		10		10					10									3
Grass Drill	5				5													3
Guerilla Exercises																		2
Combatives			10															1
Mass Games		20		15	20				20									4
Relays	20		20			20												3
Swimming							30	30			45				45			2
Athletics							45	45	45	30	45	45	30					2
Total time (Minutes)	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45		6
each period.																		
Repetitions of set drills	8	8	8	6	6	6	8	7	7	7	9		9	8				

Note. All activities listed have been taught previously.

**Table XIII. Recapitulation—Physical Training Program for Specialists and Staff
Personnel Under 40 Years of Age Utilizing Limited Time**

Periods of exercise	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	etc	Frequency of activity
Type of activity	Time in minutes																	
Drill One	20	20	15	15	15	15	15	15	15	15	15	15	20	15	15			12
Drill Two																		3
Running	5		10	5	5		5				5		5	10	15			8
Grass Drill	5		5		5			5				5	5	5				7
Guerilla Exercises		10			10						10							3
Combatives								10										3
Mass Games						10				15					15			3
Relays							10											3
Total time (Minutes)	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		2
each period.																		
Repetitions of set drills	5	5	5	6	6	6	7	7	7	8	8	8	6	6	7			

Note. Activities have been taught previously.

**Table XIV. Recapitulation—Physical Training Program for Specialists and Staff
Personnel Under 40 Years of Age Utilizing Limited Space**

Periods of exercise	1st	2d	3d	4th	5th	6th	7th	8th	9th	10th	11th	12th	13th	14th	15th	16th	etc	Frequency of activity
	Time in minutes																	
Type of activity																		
Drill One*	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		15
Sprint Running**	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		5
Grass Drill																		5
Relays***	20	5	20	5	20	5	20	5	20	5	20	5	20	5	20	5		5
Mass Games****		20	20	20	20	20	20	20	20	20	20	20	20	20	20	20		5
Athletics*****							25	25			25	25			25	25		5
Total time (Minutes)	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45	45		5
each period.																		
Repetitions of set drills	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5		

Note. Activities used have been learned previously.

* Progressively increase time of Exercise 11 (stationary run).

** Amount of space will limit length of sprint run. Provide progression by reducing amount of rest between repetitions.

*** Limit relays to the carrying and crawling types.

**** Select mass games and athletics suitable for space allocated.

CHAPTER 10

ORGANIZATION OF SUSTAINING STAGE ATHLETICS

Section I. INTRODUCTION

117. Athletics in the Conditioning Program

a. Athletic competition provides a laboratory where many valuable character qualities such as initiative, persistence, cooperation, confidence, physical courage, and the ability to think and act quickly and effectively under pressure are practiced and developed. Athletic teams are a strong unifying influence and provide one of the best means of developing esprit de corps. Competitive games offer a diversion from military duties and give the soldiers an opportunity for wholesome self-expression. Finally, soldiers enjoy athletics.

b. Athletics provide the most effective means of developing and maintaining the interest and cooperation of the men in the sustaining stage of the physical training program. Men gladly engage in the more formal conditioning activities such as conditioning exercises, log drills, guerilla exercises, and grass drills when they know they will be able to play such games as speedball, soccer, touch football, and pushball afterwards.

c. Sports and games require more space and

equipment than other physical training activities. To meet this problem, physical training periods may need to be staggered throughout the day. The problem of facilities may be overcome in part by selecting sports which use large numbers of participants, by increasing the number of players in certain sports, by modifying the size of the playing areas, and by careful scheduling.

d. No one sport reaches all muscle groups or develops all the important aspects of physical fitness. For this reason, various types of conditioning activities must be used in conjunction with athletics. Such conditioning activities serve as a warmup for the sports in addition to exercising all the muscle groups. The men should be adequately conditioned before they engage in the more vigorous sports, otherwise the competitive factor may cause them to go beyond their physical limitations.

118. Recreational Athletics

Athletics in the program must be justified in terms of the contribution they make to physical conditioning. This standard of selection excludes some popular team and individual sports. However, in addition to the athletics included in the prescribed physical training program, there is opportunity for a considerable amount of activity of a recreational nature during off-duty hours. Any sport which the men enjoy and for which facilities are available may be included in the recreational program, regardless of its conditioning value or lack of it. The two programs have different objectives, and activities selected in each case must best serve these objectives.

Recreational sports are not the responsibility of physical training.

119. Athletics and Games

The athletics included in the physical training program are of two types, informal and organized.

a. In the informal athletics and games program, competition is not highly organized. The teams vary from day to day, and no regular schedule is played. The games themselves are not highly organized and can be played with little or no advance preparation. For activities of this type, see TM 21-200.

b. In organized athletics and games, the competition is carried on in a formal fashion. Leagues are formed with representative teams from each unit. Regular schedules are played, officials are provided, and official rules are followed. The object is to determine the championship in a particular sport. Ordinarily this type of athletics is carried on during the off-duty recreational period. It is possible, however, to conduct such a program during the regular physical training period.

- (1) Intraunit tournaments in various sports may be conducted during physical training periods. The unit is divided into teams and the team members report to the proper area for the game. The only problem presented is that the contest must be terminated within the time allotted for physical training. If facilities are available, competition in three or four sports

may be carried on simultaneously. In this case, as a company or platoon forms for physical training, the team members in one sport are directed to one area, the team members of another sport to another area, and so on.

- (2) The lower levels of competition are sometimes conducted during the regular physical training hours. The higher levels, involving better teams and a strong spectator interest, are arranged during off-duty time. This practice often helps develop solidarity and loyalty within units represented by the competing teams.

- (3) The following sports can be carried on during the regular training program:

<i>Spring</i>	<i>Summer</i>	<i>Fall</i>	<i>Winter</i>
Pushball	Softball	Touch football	Basketball
American ball	Cage ball	Basketball	Soccer
Volleyball	Speedball	Soccer	Volleyball
Soccer	Military field meet	Cross-country running	
	Swimming		

- (4) Competition in horseshoes, tennis, table tennis, badminton, bowling, and other individual sports should be conducted in the recreational sports program which is carried on during off-duty hours.

120. Provisions for Instruction

One of the most effective methods of increasing interest and participation in athletics is to provide instruction in those activities with which most men are unacquainted. Such instruction can be conducted

during the regular physical training periods. Careful planning is required to keep all men continuously engaged in vigorous activity. The material in TM 21-200 concerning the recommended team athletics is to be used as a guide for instructional purposes. This material should not be used as a substitute for a coach's guide which contains more technical instruction.

121. Organization of Instruction

a. Since instructional periods are approximately one hour long, it is necessary to highly organize each period in order to maintain interest at a high level. Each period should be broken down into the practicing of fundamentals and skills as one part of the period and actual competition as the other part.

b. Teams are divided into groups of equal ability. The squad should be the size unit upon which to form teams for physical training periods. If all men have the opportunity to learn fundamental skills during the on-duty physical training period, the representative company team may be chosen from the members of the squad teams by the individual who has been appointed as the coach. It may be practical to choose teams on a platoon basis for intracompany competition.

c. Factors to be considered in the conduct of athletic instruction include—

- (1) Time allotted to each activity.
- (2) Division of personnel into specialized groups to obtain maximum benefit and interest.

- (3) Plans for teaching necessary skills prior to the scrimmage or game period.
- (4) Practical use of training aids, equipment, and information available.
- (5) Availability of courts and playing areas for practice and scrimmage.
- (6) Assignment of personnel to teams for competition.

d. In the conduct of the competitive phase of a sport, attention to the following points enlivens play and aids in maintaining interest.

- (1) Schedules are planned in advance of playing dates; facilities to be used are clearly indicated to each unit; alternate plans are prepared in case of postponements and cancellations.
- (2) Team standings are kept up to date and used to increase interest and effort.
- (3) Records are maintained on individual and team standings. These records are used to stimulate interest and provide a basis for making awards at the close of the program.
- (4) As many tournaments as practical for the local situation are scheduled. For information pertaining to the administration of various types of tournaments, see paragraph 130.
- (5) The use of varied practice routines creates interest, improves physical efficiency, and improves playing techniques.

122. Officiating

a. Every effort should be made to provide good officiating for all athletic competition. Nothing causes dissatisfaction among participants in athletic contests more quickly than poor officiating. If good officials are not available, provision should be made to develop them. The unit commander should designate interested personnel to attend clinics and coaching schools that may be conducted by civilian agencies such as high school and college officials' associations. In addition to this type of clinic, special services may hold rules clinics and teach the mechanics of officiating. Commanding officers should make these clinics available to interested personnel from each company in order that competent and qualified officials are available for games on company and platoon level.

b. The official should be issued a uniform or marking that will make him clearly distinguishable from the members of either team. A regulation striped official's shirt is not necessary. A distinctively marked or colored T-shirt is adequate. The official should also be supplied with all equipment necessary for the officiating of the particular sport.

Section II. TOURNAMENTS

123. Organized Competition

Competition is one of the best ways of maintaining interest in the physical training program during the sustaining stage. Organized competition provides enjoyable, vigorous physical activity

that has proved to be one of the best supplements to conditioning drill activities.

124. Competitive Units

Units for competition should be those units that make up the soldier's basic training or TOE unit. In the great majority of situations, the unit will be the squad—that unit in which it is essential that the spirit of cooperation and working together for a common goal be developed and maintained.

125. Selection of Activities

Several factors must be taken into consideration in the selection of an activity for tournament play.

a. Popularity of the Sport. The men should want to participate in the activity. Seasonal sports should be used whenever possible. A softball tournament, for example, should not be scheduled in the winter when basketball or football facilities are available.

b. Knowledge of the Sport. The selection of an activity should be influenced by the unit's general knowledge of the conduct and rules of the various activities under consideration. Selecting an activity of which the men have little knowledge would require additional time for instruction and familiarization. Competent officials are also difficult to locate for unfamiliar activities.

c. Available Equipment. The facilities and equipment available must be inventoried prior to the selection of an activity. There must be adequate playing area available. The number of contests

that can be scheduled at one time may be limited by both the facilities and equipment available at the desired time.

d. Adaptability of the Activity to a Competitive Program. The activity selected should be one that provides opportunity for the largest number of players to participate. For example, an outdoor hard surfaced court could be utilized more efficiently as a basketball court than as a tennis court, because 10 men could participate at a time rather than four.

126. Scheduling

Factors that limit choice of the type of tournament to be conducted are—

a. Time Available to Conduct a Competitive Program. This includes the amount of time that facilities will be available and also the amount of time that can be devoted to the competitive physical training program by the unit.

b. Space Available. The number of playing areas available must be considered in the selection of the type of tournament to be conducted. The number of areas or courts available for participation by the unit will certainly influence the selection of the type of tournament best applicable to the situation.

c. Suggestions for Scheduling.

- (1) Allow for inclement weather conditions in scheduling outdoor events. Do not schedule contests for every available date.

Leave an open date at regular intervals so that any contest postponed for weather or other reasons may be conducted without disrupting the tournament schedule.

- (2) The time allotted for competition should allow time for the competitors to shower and dress before they are required to engage in any other duty or activity.
- (3) Make advance arrangements for facilities. It is desirable to plan a tournament far enough in advance so that playing areas and equipment may be reserved through the officer in charge of the facilities, thus eliminating last minute conflicts.
- (4) Post schedules and contest rules. When schedules have been approved and cleared, they should be posted in a conspicuous place in the unit area. It is also suggested that a copy of the tournament and contest rules be posted.

127. Awards

It is desirable that some recognition be given to the winning team or individual. Verbal recognition in the form of a command announcement or even the submission of a photograph of the winning team to a local publication is considered adequate recognition. In most instances it is not practical for a unit to present trophies or medals to winners of unit competition in various activities. However, if trophies and medals are desired and

money is available for their purchase, the preceding statement should not be construed as a definite statement of policy.

128. Facilities and Equipment

In the organization of a tournament, several necessities that must not be overlooked are—

a. The Condition of the Playing Areas. Prior to the use of any area, it should be checked for boundary and other necessary markings. The surface of a field should be checked for obstructions such as large stones and other obstacles. Any deficiencies in the markings or condition of the playing area should be remedied before the scheduled time for the contest.

b Uniforms. Whenever possible, the unit should supply a means of distinguishing the members of the competing teams. It is suggested that each unit have on hand four sets of twelve colored T-shirts. Each set should be clearly distinguishable from any of the others. Prior to a contest these shirts are issued to the competing teams (each team receives a different color). At the completion of the contest, the shirts are returned to the issuing agency. Whenever possible the unit should assume the responsibility for the cleanliness of the shirts.

c. Game Equipment. Insure that the equipment necessary for the conduct of the particular event is at the proper place at the scheduled time. All equipment should be checked before each contest,

so that deficiencies may be noted before causing complications during the conduct of the game.

129. Point System

a. Advantages. The point system determines an overall winner for a designated period of time; for example, a training cycle. It is a means to retain interest in all activities conducted throughout the program, since the team standings in each sport contribute points toward the overall championship. It also helps to maintain unit solidarity in that each team should be a natural element of the larger unit; for example, squads in a company. The point system offers an incentive to the members of a competing unit to work together for a common goal.

b. Disadvantages. The most obvious disadvantage to the point system is that if one team is successful early in the cycle and accumulates a point total that virtually assures them of the championship, interest on the part of other teams naturally wanes.

130. Types of Tournaments

(TM 21-225)

a. Single Elimination. This type of tournament is best suited for a short duration in which extensive participation is not practical. It is the method of determining a winner with the fewest number of contests. The single elimination tournament, however, is the least desirable tournament to use with respect to the goal of maximum participation.

b. Round Robin Tournament. The round robin tournament does not eliminate a team from competition and it allows every team to play every other team. The winning team is that team with the best won-lost record. The disadvantage to this type of tournament is that it requires many more contests than the single elimination tournament to determine the winner. If it is at all practical to conduct a round robin tournament, it is strongly advised.

Section III. ATHLETIC CARNIVAL

131. General

When men reach the latter part of the slow-improvement and sustaining stage of training, interest in the program may lag if there is no change in course content to arouse the desire to participate. An event which does not require a high degree of skill yet demands strenuous activity is the athletic carnival. This is a series of team games conducted on a station-to-station basis during a two-hour period. All games are carried on simultaneously by all teams, two teams at each station, providing vigorous exercise, stimulating competition, and enjoyment for all. Because of the healthy rivalry that it arouses, it is an excellent form of intersquad or interplatoon competition.

132. Purpose and Advantages

The objective of the athletic carnival is to pro-

vide activity for everyone in the participating units. Activities are chosen that will develop aggressiveness, teamwork, a will to win, competitive spirit, and stimulate interest and build esprit de corps. The athletic carnival can be included as part of the physical training program or as part of the off-duty recreational program. It is a form of contest that can be conducted in nearly all circumstances because it can be easily modified, requires a minimum amount of equipment, and can be readily organized.

133. Level of Competition

The Athletic carnival is flexible. It can be adjusted to large or small sized groups. A company sized unit is the most desirable but it may also be administered within a larger unit. If it is conducted within a company, the participating units will be the squads, and if it is held within a larger unit, the platoons comprise the teams. The larger size unit requires more extensive organization and administration.

134. Selection of Events

In organizing an athletic carnival, it is important that the events selected be simple and easy to administer (TM 21-200). All rules and regulations should be clearly understood by everyone, and the technique of performing any event should not require previous practice. In selecting the events, the interest and capabilities of the men, and the equipment and facilities available, must be considered.

135. Equipment and Facilities

The site at which the contest is to be conducted must be large enough to permit the events to be about a central control point. If there are facilities available such as volleyball courts, softball fields, basketball courts, etc., they should be utilized. A public address system is desirable at the control point for the initial orientation of the teams, subsequent announcements of the time lapses, cumulative scores, and final standings.

136. Personnel

Efficient administration of the athletic carnival is dependent upon the personnel who act as referees, judges, and scorers. Individuals within the units who have had athletic or officiating experience should be utilized. Prior to the day of the event, all administrative personnel should be briefed and assigned a specific task in order that they may become familiar with the rules and organization of the games which they are to conduct. The following personnel should be available—

a. A primary instructor or supervisor who is in charge of the control center and who is responsible for the successful operation of the athletic carnival. He must have an assistant to act as a timer and scorer.

b. One assistant instructor in charge of each event. He should be—

- (1) Familiar with the rules of the game which he is to conduct.

- (2) A good leader to insure proper supervision and control over the teams which are participating in his event.
- (3) Enthusiastic to provide proper motivation.
- (4) Confident in himself and in his ability to judge infractions of the rules. He must be fair in his judgment and penalize without hesitation when infractions occur.

c. Several men to serve as runners between event stations and the control point. These men collect and deliver scores.

137. Team Organization for Competition

The size of the teams is determined by the level on which the carnival is organized. Maintaining the integrity of the unit promotes esprit de corps. But this does not preclude grouping two squads into one team. By using the smaller unit as the competing element, selection of games is made easier. There should be twice as many teams as there are events so that all teams have the opportunity to play each game and still not have to play any other team more than once (tables XV-XVII). Each team is numbered, and during the orientation the team leaders are given a schedule for their team's rotation. After the orientation, teams are dispersed to their starting stations. Upon the completion of an event, each team proceeds to its next station. A blackboard should be at the central point, listing the teams, rounds, events, and point totals. After

the second round of play, the team standings are announced frequently. At the conclusion of the athletic carnival, final scores and team standings are announced.

138. Conduct of Events

a. The assistant instructor at each station takes charge of his group and gives a brief explanation of the major rules of the event for which he is responsible. He is in a position to be seen and heard by all when he is presenting his explanation, and he speaks clearly and distinctly to avoid confusion and misinterpretation of the rules. A short demonstration is desirable if it will help clarify the event. The assistant instructor should make certain that the teams can be clearly distinguished; for example, T-shirts versus fatigue jackets, caps vs capless, or by the use of colored jerseys. He should teach a whistle response (teams stop play immediately upon hearing whistle), get the event started as quickly as possible, and make any necessary corrections as the contest progresses. The rule of good officiating is to use a minimum of calls, yet maintain control of the contest. Penalize when necessary, but refrain from disqualifying contestants or teams. Keep the activity moving as rapidly as possible and when the central control point sounds the whistle to stop the play, all competition ends immediately. The assistant instructor then assembles the group, forwards the team scores to the central control point, and upon the signal from the central control point, rotates the teams to their next station. It is essential that the rotation and orientation of

the teams be carried on in a quick and orderly fashion, because of the minimum time allotted between contests. Upon completion of the final event, the assistant instructors move their teams to the central control point for the announcement of team winners, presentation of awards (if any), and final critique. If all the fundamental rules of organization, leadership, officiating, and administration of the athletic carnival are properly and thoughtfully executed, the troops will obtain the benefits of intensive exercise while enjoying the satisfaction of competition, teamwork, and recreation.

b. For inclement weather, it is possible to conduct the athletic carnival indoors if adequate space such as a gymnasium or field house is available. Under limited space conditions, it may become necessary to reduce the number of teams. A suggested method is to alternate teams as spectator and participant. There are numerous games and relays that may be substituted and adapted to small areas and which lend themselves to a spectator-participant arrangement.

139. The Scoring System

The system for determining the winner of the athletic carnival is simple and efficient (table XVIII). At the completion of competition, the scorer totals the points that each team has scored in all contests. The scorer then subtracts the number of points scored against a team from the number of points the team has scored. The resulting scores are placed in a column with the highest score at the top and the lowest at the bottom (some teams

will have a minus total; that is, a team may have more points scored against them than they have scored). The team with the highest total is the winner. This type of scoring system encourages a team to prevent the opposing team from scoring.

Table XV. Four Events—Eight Team Rotation

Events	Rounds			
	I	II	III	IV
Keep away	1 - 5*	2 - 6	3 - 7	4 - 8
Crab soccer	2 - 8	3 - 5	4 - 6	1 - 7
American ball	3 - 6	4 - 7	1 - 8	2 - 5
Cage ball	4 - 7	1 - 8	2 - 5	3 - 6

* Team numbers.

Table XVI. Six Events—Twelve Team Rotation

Events	Rounds					
	I	II	III	IV	V	VI
Keep away	1 - 7*	2 - 8	3 - 9	4 - 10	5 - 11	6 - 12
Crab soccer	2 - 12	3 - 7	4 - 8	5 - 9	6 - 10	1 - 11
American ball	3 - 11	4 - 12	5 - 7	6 - 8	1 - 9	2 - 10
Cage ball	4 - 9	5 - 10	6 - 11	1 - 12	2 - 7	3 - 8
Punch baseball	5 - 8	6 - 9	1 - 10	2 - 11	3 - 12	4 - 7
Goal-HI	6 - 10	1 - 11	2 - 12	3 - 7	4 - 8	5 - 9

* Team numbers.

Table XVII. Eight Events—Sixteen Team Rotation

Events	Rounds							
	I	II	III	IV	V	VI	VII	VIII
Keep away	1-9*	2-10	3-11	4-12	5-13	6-14	7-15	8-16
Crab soccer	2-16	3-9	4-10	5-11	6-12	7-13	8-14	1-15
American ball	3-15	4-16	5-9	6-10	7-11	8-12	1-13	2-14
Cage ball	4-14	5-15	6-16	7-9	8-10	1-11	2-12	3-13
Punch baseball	5-12	6-13	7-14	8-15	1-16	2-9	3-10	4-11
Goal-HI	6-13	7-14	8-15	1-16	2-9	3-10	4-11	5-12
Kick ball	7-11	8-12	1-13	2-14	3-15	4-16	5-9	6-10
Pushball	8-10	1-11	2-12	3-13	4-14	5-15	6-16	7-9

* Team numbers.

Table XVIII. Sample Scoring Chart Four Events—Eight Teams

ROUNDS	SQUAD 1		SQUAD 2		SQUAD 3		SQUAD 4		SQUAD 5		SQUAD 6		SQUAD 7		SQUAD 8	
	SQUAD 1	OPPONENTS	SQUAD 2	OPPONENTS	SQUAD 3	OPPONENTS	SQUAD 4	OPPONENTS	SQUAD 5	OPPONENTS	SQUAD 6	OPPONENTS	SQUAD 7	OPPONENTS	SQUAD 8	OPPONENTS
ROUND 1																
ROUND 2																
ROUND 3																
ROUND 4																
TOTAL																
SQUAD SCORE MINUS OPPONENTS' SCORE																
STANDING																

CHAPTER 11

THE EVALUATION OF PHYSICAL FITNESS

Section 1. METHODS OF EVALUATION

140. Responsibility

The commander is responsible for the physical fitness of his men and officers. He may employ various methods in making a practical evaluation of physical condition of his personnel.

141. Inspection

Commanders utilize inspection officers to assist in the evaluation of the effectiveness of physical training programs. The inspectors of physical training periods record their opinion on the form provided in chapter 5. Inspectors who are to comment on the physical fitness of troops participating in Army training tests will use an unweighted adjectival rating of Superior, Excellent, Satisfactory, or Unsatisfactory.

a Routine observation of individual or unit physical tasks serve as an indication of ability to do that particular task. To avoid false impressions, careful and frequent observations over a long period of time must be made. Observation consumes much time and is often unreliable in the evaluation of large groups of personnel.

b. Trim body appearance does not necessarily mean that the individual is in good physical condi-

tion. Observation can detect the individual cases of muscular flabbiness and overweight that need attention and correction.

142. Medical Examination

Temporary injuries, sickness, overweight, and other causes may prevent the increase, or cause regression of physical condition. Medical examination may be used in those cases of temporary disability as a means of evaluation and as a guide for the prescription of an exercise program.

143. Testing

a. Except in basic combat training phase when the physical fitness test is given twice, it is not mandatory that tests be administered. Two standardized tests are available to the commander as additional means of evaluation. These tests are designed to measure strength, endurance (circulo-respiratory and muscular), coordination, and skill. They are the physical fitness and physical achievement tests (TM 21-200).

b. The Physical Achievement Test should be administered only to combat type units. The test is given at the discretion of the unit commander. Frequency of testing is also decided by the commander. Combat type units have both tests available.

Section II. BASIC CONCEPT OF TESTING

144. Standards of Fitness

a. There is no passing or failing score on these tests. Properly motivated, men prefer to set an

objective for themselves either prior to or during a test. The scoring tables are constructed to aid the commander in establishing standards for his command. For example, an individual who scores 50 points on each of the five test events is average for the entire test. Such an individual compares with the average as established from results of 10,000 men who were tested to establish the scoring tables. Personnel who fail to meet the average level should be encouraged to measure up; personnel who exceed the average should be encouraged to move on ahead. When personnel score approximately the same number of points after they have participated in a number of tests, it may mean that the limit of improvement has been reached. This may be true of the group which scores in the excellent bracket starting at 375 points on the scoring tables. The problem then is to maintain this level of physical fitness.

b Occasionally, schools or agencies establish a physical fitness test score as a prerequisite for admission. These established scores are only applicable for these situations. In no instance should any of these prescribed scores influence standards for physical fitness testing of individual replacements or of units. Under no circumstances should any unit establish standards or goals that are below average in the physical testing program.

145. Obtaining Valid Test Results

A successful physical fitness testing program depends on obtaining valid test results. In addition to trained judges, other factors contribute to ob-

taining reliable test results. Personnel must participate in all test events and put forth their best effort on each event. If an individual scores 250 points in the physical fitness test after completing the four test events prior to the 300-yard run and is not required to participate in this event, then his circulo-respiratory endurance has not been measured. If the individual does not exert his best efforts on each of the test events, a correct evaluation of his physical fitness cannot be determined. Conditioned men need have no fear of ill effects due to an all-out effort, as a normal night's rest is adequate for full recovery.

146. Use of Tests in the Conditioning Program

Personnel who score low on the test should not be given a number of physical fitness tests to improve their physical condition. Instead, they should be given a program of selected conditioning exercises on a regular basis. Upon completion of the conditioning program, they should be retested to determine improvement. The conditioning value derived from participating in physical fitness tests is incidental to measuring and evaluating the level of fitness personnel have reached.

147. Use of Competition in Testing

The test events are extremely vigorous. In addition to physical strength and endurance, determination and incentive are essential for the individual to put forth his best effort on each test event. Use of competition should be exploited.

148. Value of Testing

Physical efficiency testing is an integral part of any physical training program. It is an invaluable aid to those charged with the important responsibility of the physical conditioning of troops. Just as the physician diagnoses his patient before he prescribes a course of treatment, so should the physical training supervisor determine the needs of the men prior to establishing his recommendations for improvement. By determining first what physical assets and liabilities the troops have, the physical training program can be employed more intelligently and effectively to meet the needs indicated. A well-conducted physical fitness testing program has a number of values.

a. For the Individual.

- (1) It indicates his overall fitness. The score obtained serves as a guide for the individual to compare his physical fitness to that of other men.
- (2) It reveals his areas of weakness and strength. Since the various batteries do test separate areas of the body, a low score singles out weakness of that particular part of the body.
- (3) It serves as motivating factor to improve. Normally, men are receptive to a physical training program if they know and understand their deficiencies and see proof that they can be improved.

b. For the Physical Training Instructor.

- (1) It aids to determine intensity of future

program. Tests administered at the beginning of the training program assist the instructor in determining how intensive a program of physical conditioning is necessary.

- (2) It helps to evaluate the completed program. Tests provide the instructor with the means of measuring the progress of his individual men or unit and of evaluating the effectiveness of the training when compared with previous test results.
- (3) It indicates men who need special training. Tests serve to indicate to the instructor the specific needs and deficiencies of individual men who may require special instruction or corrective work.
- (4) It reveals the degree of fitness of the group. Accurate results of the physical fitness test enable the physical training instructor to ascertain the physical condition of the men at the time tested.

c For the Unit Commander

- (1) It indicates the degree of success of the program. Tests provide the commanding officer with the means of measuring the progress of his individual men or unit and of evaluating the effectiveness of the training when compared with previous test results.
- (2) It aids in future planning of the program. Tests reveal to the commanding officer the status of conditioning of his men.

This frequently leads to an intensification of the physical training program to meet special requirements.

- (3) It determines degree of fitness of the unit. The average performance of the group can be compared to the average as established by other units of similar type.

149. Criteria for Selecting Test Events

So many physical efficiency tests are available that a problem is presented when a test battery is to be selected. Following are the criteria used for the selection of the test batteries determined for Army use.

a. The various factors in physical fitness that are tested and measured include muscular strength, muscular endurance, circulo-respiratory endurance, agility, and coordination.

b. The test events selected require a minimum of equipment that is easy to procure and set up.

c. The tests are such as to be capable of being administered with a maximum economy of time.

d. The test events are fitted to the physical condition and skill level of participating personnel.

e. Test events selected are easily and objectively scored. Complicated tests that demand highly skilled technicians for their administration can not be used.

f. Test events are selected for which scores can be readily transformed to a numerical point value. When tests are scored with points, men are more

strongly motivated and it is possible to obtain a better index of the individual's total physical fitness.

g. The test batteries clearly distinguish between physically fit and unfit individuals. Test results obtained from fit groups are consistently better than those obtained from poorer groups.

h. To the extent possible, each test event measures only one element of physical condition. When a test measures a number of different aspects of physical fitness, it is impossible to determine how much of each element is present.

Section III. SUPERVISION OF TEST ADMINISTRATION

150. Uniformity in Testing

a. Judging and Scoring.

- (1) In order to secure complete uniformity, all events are judged and scored in an identical manner. It is essential that the judges and officials be carefully trained. Participants should never be used to judge each other since there are always certain violations of proper form which no one but a trained judge recognizes. The trained judge is also more impartial than the friends of the men taking the tests or fellow participants. The uniformity in judging and scoring will be in direct ratio to the time spent in training judges and scorers. Company officers and noncommissioned officers with physical education backgrounds are usually best qualified for this job. A qualified officer

should supervise the test very carefully to insure that all judging and scoring is done uniformly. Correct judging and scoring will make for better participation and performance.

- (2) To further insure uniform test results, it is recommended that a committee be designated to judge all units of the command. For example, the headquarters and headquarters company of the battle group could be assigned the mission of providing officials and judges for the conduct of the tests for the entire battle group. The personnel selected as judges and officials could then be trained prior to the test.

b. Order in Which the Events are Conducted. A true indication of the performance of the men cannot be obtained unless the test events are conducted in the same order for all men. Fatigue from participation in certain events markedly reduces performance in other events. For example, it is not fair to compare the pull-up records of two men when one runs the 300-yard run immediately before doing the pull-ups and the other does not. It takes slightly longer to conduct the events if all men take them in the same order, but the extra time is well justified. The order of events should be in the same manner in which they are listed in TM 21-200. Sufficient lanes, judges, and equipment should be made available to prevent long delays at any one operation. If the lack of equipment or space causes delay, squads of men, as a unit, can be moved from station to station as they complete each of the dif-

ferent events. Likewise, the testing of men in numerical order within the lanes guarantee the participants approximately the same amount of rest between events.

c. Motivation. Unless the men fully exert themselves, results will not represent their true condition. Results should give both the commanding officer and the participant a true picture of what the individual can or cannot do. All groups should be uniformly motivated.

d. Condition of the Test Areas, Equipment, and Facilities. All conditions should be the same for the various groups taking the tests. When at all possible, the surface used for the events should be smooth and dry.

e. Activities Prior to the Hour of the Test. On the day of the test, the activity immediately preceding the test should not be too vigorous. For example, men marching four miles to the testing area are at a disadvantage when compared to men riding to the area. Those who stand guard the night previous to the test are somewhat handicapped. In the interest of uniformity, all testing should be done in the morning, or all in the afternoon. Testing on Mondays or the day following pay day should be avoided.

f. Wearing Apparel. All men should wear similar clothing. This is particularly important with regard to shoes. When climatic conditions warrant, it is permissible to remove the upper garment and participate in T-shirts.

151. Judges

a. Judges should be trained in the following knowledge and techniques prior to administration of the tests. Four hours is considered to be the minimum time necessary to teach these subjects.

- (1) Objectives of the testing program.
- (2) Recognition of correct and incorrect execution of the test events that require judging.
- (3) Positioning of the judge for best observation of test event execution.
- (4) How to count repetitions correctly on those events that require multiple repetition.
- (5) Use of scoring tables.
- (6) Practice scoring.
- (7) Organization and procedure for conduct of the test.
- (8) Uniform requirement for judges and participants.
- (9) How to operate and time the running events with a stop watch.

b. The instructor responsible for training the judge is the officer who will be in charge of administering the test. Instruction should stress correct demonstrations and practical work; the training of judges should end with an observation type examination. The unit training officer should supervise the preparation of instruction for training of judges. See section III of this chapter and TM 21-200 for guidance in preparing this instruction. The following is suggested as a guide to the training

officer in orienting the officer who is to conduct the instruction.

- (1) Outline the scope of instruction and require that lesson plans be prepared and checked prior to training of judges.
- (2) Require rehearsal of instruction prior to its presentation.
- (3) Select and rehearse demonstrators. Demonstrators selected should be proficient in demonstrating correct form of executing the test events. During the instruction, the correct and incorrect methods, and once again the correct methods of execution should be demonstrated in that order.
- (4) Prepare an observation type examination that will require judges to determine correct and incorrect methods of execution of test events. Preparation of this examination should be based upon the contents of TM 21-200 and section III of this chapter.
- (5) Conduct a critique of judge's performance at the end of each administration of a test.

152. Preparation of Men for Testing

Personnel who have not had the advantage of regular participation in a scheduled physical training program, and who are to take a physical fitness or achievement test, should engage in a minimum of 10 to 12 periods of physical training prior to being tested.

a. Prior preparation of men insures that they will not be handicapped by muscular stiffness and soreness at the time of the test administration. Such preparation also reduces the possibility of injuries during the test.

b. All men should be instructed in the proper form of the test events and be given an opportunity to practice each several times under supervision, prior to the administration of the test. The opportunity for teaching the men the correct form for executing the various test events is adequately presented during the physical training periods.

c. Frequently, the type of running stressed in physical training is adapted to economy of effort and not to speed; therefore, men should be given instruction and practice in sprint running. This type of running also can be provided through the regular physical training program.

153. Frequency of Testing

A unit commander should not utilize tests too frequently. Men are inclined not to cooperate if tested at short intervals. A test every 8 to 12 weeks is sufficient. Frequency of testing, except in the basic combat training phase, is a command prerogative.

154. Adjustment for Age

All troops should endeavor to achieve a high standard of physical fitness regardless of age, for military combat takes no cognizance of age. However, for the purpose of scoring, the standards tend to drop one point for each year beyond 30.

Men beyond 30 are awarded one point per event for each year in excess of 30. For example, a man who is 37 years of age scores 70 points in the squat jump event. He is awarded seven points due to his age, thus increasing his score to 77 points for this event.

155. Motivation

There are various methods of promoting interest in the physical fitness testing program and of obtaining the best effort of the men being tested.

a. Score Tables. See paragraph 144.

b. Scorecards. A well prepared scorecard motivates the men to strive to reach their best performances. The scoring table on the scorecard should be used to interpret the raw score. As the judge records each man's raw score, he should also indicate the point score. Men want to know what constitutes an average score and what constitutes a good score; it is recommended that they be informed of the total points necessary to score Average, Good, and Excellent. The scorecard provides space for scoring tests given at different times. By comparing the subsequent scores with their earlier scores, men are encouraged to exceed their previous scores.

c. Action of Officials. The officer in charge of the test, by his manner and technique, can do much to motivate the men.

(1) Prior to the test he should—

(a) Plan the orientation for the test; be pre-

pared to tell the men objectives and reasons for the test.

- (b) Rehearse the demonstrations; show right and wrong executions.
 - (c) Set up competition between squads or platoons and announce plan to men.
 - (d) Insure that judging and scoring will be accurate and fair.
 - (e) If possible, establish a suitable award to go to the individual or unit winner.
 - (f) Announce previous record for each test event and high total scores.
- (2) During the conduct of the test, he should—
- (a) Enthusiastically offer encouragement at all times. For example, require judges to “sound off” with the number of each repetition completed during the physical fitness test.
 - (b) Recognize the three highest point winners of each event.
 - (c) Announce the raw score needed to score 100 points as part of orientation for each event.
 - (d) Carefully supervise to insure that the prior planning as outlined in c(1) above is effective.
- (3) After the test, he should—
- (a) Provide individual total scores before the men leave the test area; if this is not practicable, he should provide this information as soon as possible.
 - (b) Prepare reports as required by commanding officer so that unit average

score may be computed and unit winners announced.

- (c) Recognize the individual winner within the unit.
- (d) Devise a plan for effective use of the test result.

d. Physical Fitness Competition. A physical fitness tournament can be conducted within the group to determine the company with the highest degree of physical proficiency. A tournament of this type stimulates interest in fitness and assists in motivating men to improve their physical condition. Each company must test not less than 90 percent of its total personnel. The highest average total score determines the unit winner. At the conclusion of the tournament, companies are ranked from the winner down to the lowest. To sustain interest throughout the tournament, average point scores should be computed at the completion of each event and announced as soon as possible. In this way men keep abreast of the progress of the tournament.

156. Equipment and Facilities

Certain equipment, facilities, and areas are required for the administration of the two tests prescribed in the testing program.

a. Physical Fitness Test.

- (1) Pull-up bars—for pull-up event.
- (2) Stop watch or sweep second hand watch—for 300-yard run.
- (3) Flag, whistle, or starter gun—for 300-yard run.

- (4) Colored pencils—for marking score on cards.
- (5) Scorecards—for a permanent record of the scores.
- (6) Stakes, 2 inches x 2 inches x 4 feet—for lane markers in 300-yard run.

b. Physical Achievement Test.

- (1) Rope, 1½-inch, 20 feet—for rope climb event.
- (2) Measuring boards, 1 inch x 6 inches x 15 feet—for triple jump event.
- (3) Flag, whistle, or starting gun—for starting running events.
- (4) Stopwatches—stopwatches must be used to time the 75-yard dash and the mile run; sweep second hand wrist watches may be used to time the rope climb and 150-yard man carry.
- (5) Stakes, 2 inches x 2 inches x 4 feet—for marking end of course in the 75- and 150-yard run events.
- (6) Colored pencils—for marking score on cards.
- (7) Scorecards—for a permanent record of the scores.
- (8) Numbered cards—for identification of runner in the mile run.
- (9) Measured mile course—for running the one mile run.

c. Permanent Testing Area. If a permanent testing area is constructed and a definite part of that

area designated for each test event, it is recommended that events requiring no fixed equipment be moved as necessary to prevent the development of poor ground conditions due to excessive wear. While such a designated area may be desirable, no special requirements are needed for the majority of the test events other than a level area.

Section IV. USE AND INTERPRETATION OF TEST RESULTS

157. Purpose of Interpretation

a. The purpose of physical efficiency testing is to measure the physical fitness of the troops. An evaluation of this fitness is determined by converting raw scores to point scores for each test event. Methods for computing and interpreting test scores are explained in paragraph 158.

b. Properly interpreted test results reveal to the unit commander—

- (1) The physical condition of the individual soldier. This is accomplished by comparing the score achieved with the Very Poor, Poor, Good, and Excellent classifications on the scoring tables.
- (2) The level of physical fitness of the entire unit. By computing scores as outlined in paragraph 158, the unit commander can establish unit averages for each test event and the total score average. He can further compare levels of physical fitness with other units of his command or with units of other commands.

- (3) Deficiencies in his physical training program. For example, if results of the squat jump event are found to be in the Poor category, it would indicate muscles of the legs need further development. To correct this condition, the commander would modify his physical conditioning program to include more emphasis on exercises such as running, "leg-spreaders," "leg-overs," and the "mountain climber."
- (4) The men who are below average in physical fitness. Special attention can be devoted to this group. One method which has been employed successfully is to assign the platoon leaders the responsibility for improving the performance of these men who are below average.

c. Commanders are cautioned not to determine individual and unit physical fitness by using only total scores. Detailed study of results on each test event is of more importance. An individual can have a relatively high total score, yet have limited strength and endurance in a particular body area. For example, an individual may have a total score of 300 points, which is considered to be above average; however, study of each test event score may reveal the following:

<i>Event</i>	<i>Raw score</i>	<i>Point Score</i>
Pull-up	2	24
Squat jump	78	76
Push-up	9	24
Sit-up	80	90
300-yard run	47.5	86
	Total points	<hr/> 300

It is obvious that a raw score of 2 pull-ups and 9 push-ups falls in the very poor category. This would indicate that the individual lacks sufficient development of shoulder girdle, arm flexor and extensor muscle strength and endurance. Although development of the legs (squat jump), abdominal area (sit-ups), and circulo-respiratory endurance (300-yard run), is considered to be excellent, the individual is not totally fit. He must therefore concentrate more on exercises to improve the strength of the arm and shoulder girdle. If similar results were found to be prevalent throughout a command, a change in the conditioning program to correct this deficiency may be indicated.

158. Methods for Interpretation of Test Scores

The results of test scores are meaningless unless they are intelligently interpreted to indicate weakness and strength of the individual, the platoon, the company, or the battle group. There are various mathematical "tools" to aid in the interpretation of test scores.

a. Average Raw Score. In order to determine the raw score of a unit, the individual scores of that particular group should be averaged. To obtain the average raw score for a company, for example—

- (1) Total the number of men of the company participating in a particular event (pull-ups, for example).
- (2) Total the number of pull-ups completed for the company.
- (3) Divide the total number of pull-ups by

the total number of men performing pull-ups. This resulting figure is the average raw score in the pull-up event for the company.

Example:

1450 pull-ups

190 men participating

Divide 1450 by 190 = 7.63 = 7.6, average of pull-ups for company.

b. Average Point Score. The raw score is converted to a point score according to the physical fitness test scoring table for each of the participating individuals on each of the events. The recommended method to find the average point score is to proceed exactly as in *a* above.

Example:

11,020 points total for pull-ups

190 men participating

Divide 11,020 by 190 = 58.0, average point score of pull-ups for the company.

c. Comparison of Units Graph. For purposes of determining strength and weakness of given units, enhancing competition, and generally understanding the physical fitness of his men, the platoon leader, company commander, or battle group commander can effectively make a comparison of his unit by—

- (1) Determining the point score average of his unit on each event as outlined in *b* above.
- (2) Determining the overall point score average of his unit by adding the averages of each event and dividing by the number of events.

- (3) Devising a graph (table XIX) in such a way that on the left hand side the point scores 0 to 100 are evenly distributed, and across the top of the graph the events are listed.
- (4) Representing the average point scores as computed in (1), above, for a particular group by a straight line from the bottom of the graph up to the score on the left hand side of the graph that corresponds to that point score.
- (5) Comparing test results. Table XIX is a sample of a comparison of companies on the physical fitness test for the battle group commander. From this table it is apparent that all companies are deficient in circulo-respiratory endurance as evidenced by low average scores on the 300-yard run event. The battle group commander will recognize the need for additional running activities in the program. Similar graphs could be prepared indicating squad result for the platoon leader and platoon result for the company commander.

d. Physical Fitness Progress Chart. One of the primary concerns of the commander is the improvement of his men's physical condition. To portray this improvement effectively, a chart similar to that illustrated in table XX may be used. This chart is a sample company progress chart, showing the improvement from the first to the second administration of the physical fitness test. To compute

the entries for the chart, the following method is recommended:

- (1) On the first administration of the physical fitness test, determine the point score averages of the squad, platoon, company, or battle group, whichever the case may be, by methods outlined in *b*, above, for each of the events. Record this average point score on the table for each event and for each unit.
- (2) On the next administration of the test, determine average point scores as in (1) above, and again record the results on the table XX.
- (3) Divide the point score averages of the first test by the point score averages of the second test.
- (4) Subtract this figure from 100.
- (5) This result is the percentage of improvement from the first to the second test in that particular event. Record this percentage of improvement on the table for each event and for each unit.

$$39/45 = 86.67$$

$$100 - 86.67 = 13.33\% \text{ improvement} \\ \text{from first to second test.}$$

e. Value of Physical Fitness Progress Chart. A number of important deductions can be obtained from such a chart by the unit commander. Referring to the sample progress chart, the company commander knows, for example, that—

- (1) There was some overall improvement be-

tween the two tests, but 4.9 percent is much too low a percentage to indicate improved physical fitness of the company.

- (2) The company average, as indicated on the bottom line of the chart, shows pull-ups and push-ups to be in the Poor category. Consequently, the physical training program for the company must include enough exercises involving the shoulder girdle muscles to improve the upper body parts, at the same time maintaining satisfactory condition of the other body parts.
- (3) The company was in the lower portion of the Good category in the sit-up event, scoring an average of 53 points on the second test. It is significant that the 3d platoon was the poorest on this event.
- (4) The company showed more improvement on the 300-yard run, averaging 6.5 percent of improvement, although the 3d platoon was lowest once again.
- (5) After the 2d test, the company was average on squat jumps, with the 3d platoon low.
- (6) The third platoon was consistently low on both tests and showed the least amount of improvement. This platoon should spend additional time in improving its overall physical condition.

f. Individual Progress Chart. The company and battle group commanders are interested in the physical condition of their men as a unit, but the

platoon leader is specifically concerned about the fitness of the individual man. Table XXI is recommended for the platoon leader as an accurate indication of the physical fitness of his men. Total test scores are sometimes misleading for they do not indicate specific weakness and strength. Recording scores of each event facilitates analysis of each individual.

Table XIX. Comparison of Units Physical Fitness Test For an Infantry Division Battle Group

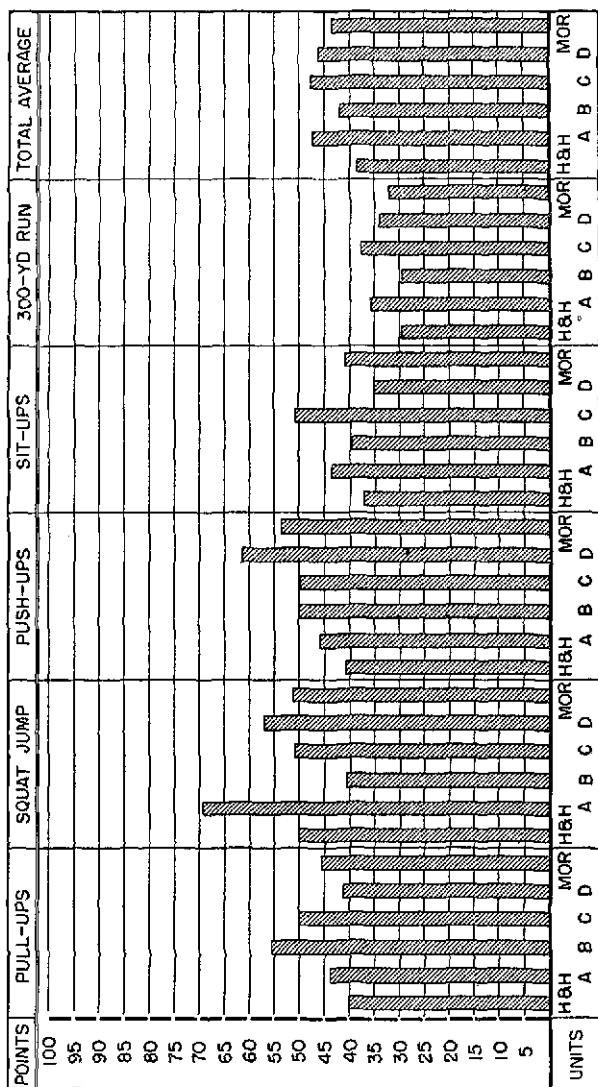


Table XX. Physical Fitness Progress Chart Improvement Between First and Second Test
Company B

Platoon	Pull-ups			Squat jumps			Push-ups			Sit-ups			300-yd run				Total average improvement of platoons
	Avg score		Imp	Avg score		Imp	Avg score		Imp	Avg score		Imp	Avg score		Imp		
	1st	2d		1st	2d		1st	2d		1st	2d		1st	2d			
1st	38	42	9.5	47	50	6.0	43	49	12.2	52	56	7.1	46	51	9.8	8.9	
2d	35	38	7.9	46	49	6.1	48	49	2.1	53	55	3.6	48	50	4.0	4.7	
3d	41	41	0.0	45	46	2.2	41	42	2.4	48	48	0.0	40	41	2.4	1.4	
4th	45	46	2.2	52	53	1.9	46	48	4.2	52	55	5.5	47	52	9.6	4.7	
Company average	40	42	4.9	48	50	4.0	45	47	5.2	51	53	4.1	45	49	6.5	4.9*	

* Overall average improvement of company.

Table XXI. Individual Physical Fitness Progress Chart
2d Platoon

Name	Test No.	Pull-ups		Squat jumps		Push-ups		Sit-ups		300-yd run		Total score	Date	Remarks
		Raw	Pt	Raw	Pt	Raw	Pt	Raw	Pt	Raw	Pt			
Adams, John C.	1	2	24	70	68	32	55	40	43	71.0	10	200	17 Oct 55	Do more running and pull-ups.
	2	3	32	75	73	27	50	40	43	65.5	32	230	17 Apr 55	Could improve more running & pull-ups.
	3													
	4													
Brown, Charles	1	17	97	82	80	60	100	75	80	46.0	92	449	17 Oct 55	Excellent condition.
	2	17	97	90	90	60	100	80	90	45.5	94	471	17 Apr 55	Excellent condition.
	3													
	4													

Chadler, James R.	1	0	0	20	18	10	26	22	25	73.0	2	71	17 Oct 55	Very poor
	2	0	0	21	19	9	24	29	32	72.0	6	81	18 Apr 55	Very poor
	3													
	4													
Dowbrow- ski, F.	1	6	50	52	50	27	50	47	50	58.5	50	250	18 Oct 55	Average
	2	10	70	70	68	35	58	63	66	50.0	76	338	17 Apr 55	Good improve- ment.
	3													
	4													

159. Scorecards

a. One scorecard is used in the recording of test scores (TM 21-200). Scoring tables are printed on the card to facilitate conversion of raw scores to point scores as the test events are completed (tables XXII and XXIII).

b. At the completion of a test the following action should be completed in relation to scorecards:

- (1) Raw scores are converted to point scores by use of the scoring tables. For example, 10 pull-ups equal 70 points.
- (2) Point scores are totaled for the five events to determine individual total test scores.
- (3) Total scores are entered on a unit score sheet and posted in the area.
- (4) Unit averages are computed and compared.
- (5) The percentage of improvement between the present and the previous administration of the test is computed for each unit.
- (6) Individual total scores are forwarded to the personnel section and entered on the individual's DA Form 20.
- (7) Score cards are placed on file by the unit for use during the next test. Retaining the scorecard and using the card for successive tests will have the advantage of including past scores and serve as a basis of comparison in the current test.

Table XXII. Physical Fitness Test Scoring Table

Points	Pull-ups	Squat jumps	Push-ups	Sit-ups	300-yd run nearest $\frac{1}{2}$ sec.	60-sec squat thrust
100	18	95	60	85	44.0	41
99						
98		94	59	84	44.5	40
97	17					
96		93	58	83	45.0	
95						
94	16	92	57	82	45.5	
93						39
92		91	56	81	46.0	
91						
90	15	90	55	80	46.5	
89						38
88		89	54	79	47.0	
87						
86	14	88	53	78	47.5	
85		87				37
84		86	52	77	48.0	
83		85				

EXCELLENT

Table XXII. Physical Fitness Test Scoring Table—Continued

Points	Pull-ups	Squat jumps	Push-ups	Sit-ups	300-yd run nearest ½ sec.	60-sec squat thrust
EXCELLENT						
82	13	84	51	76	48.5	36
81		83			49.0	
80		82			49.5	
79		81			50.0	
78	12	80	49	74	49.5	35
77		79			50.0	
76		78			50.5	
75		77			51.0	
GOOD						
74	11	76	47	71	50.5	34
73		75			51.0	
72		74			51.5	
71		73			52.0	
70	10	72	45	67	52.5	33
69		71			53.0	
68		70			53.5	
67		69			54.0	
66		68	43	63	54.5	

GOOD	9	65	67	42	62	53.0	32
		64	66	41	61		
		63	65	40	60	53.5	
		62	64	39	59		
		61	63	38	58	54.0	
GOOD	8	60	62	37	57		31
		59	61	36	56	54.5	
		58	60	35	55	55.0	
		57	59	34	54	55.5	
		56	58	33	53	56.0	
GOOD	7	55	57	32	52		30
		54	56	31	51	56.5	
		53	55	30	50	57.0	
		52	54	29	49	57.5	
		51	53	28	48	58.0	
AVERAGE	6	50	52	27	47	58.5	29
POOR	5	49	51	26	46	59.0	28
		48	50	25	45	59.5	
		47	49	24	44	60.0	
		46	48	23	43	60.5	
		45	47	22	42	61.0	
POOR	27	44	46	21	41	61.5	27
		43	45	20	40	62.0	

Table XXII. Physical Fitness Test Scoring Table—Continued

Points	Pull-ups	Squat jumps	Push-ups	Sit-ups	300-yd run nearest ½ sec.	60-sec squat thrust
42	4	44	19	39	62.5	26
41		43	18	38	63.0	
40		42	17	37	63.5	
39		41		36		
38	3	40	16	35	64.0	25
37		39		34		
36		38	15	33	64.5	
35		37		32		
34	3	36	14	31	65.0	24
33		35		30		
32		34	13	29	65.5	
31		33		28		
30	3	32	12	27	66.0	23
29		31		26		
28		30	11	25	66.5	
27		29		24		
26	3	28	10	23	67.0	22
25		27		22		

P O O R

24	2	26	9	21	67.5	
23		25	8	20	68.0	21
22		24		19		
21		23	7	18	68.5	
20		22		17		
19		21	6	16	69.0	20
18		20		15		
17		19	5	14	69.5	
16		18		13		
15	1	17	4	12	70.0	19
14		16		11		
13		15	3	10	70.5	18
12		14		9		
11		13	2	8	71.0	
10		12		7		
9		11	1	6	71.5	17
8		10		5		
7		9		4	72.0	
6		8		3		
5		7		2	72.5	16
4		6		1		
3		5			73.0	15
2		4			73.5	14
1		3				

VERY POOR

Table XXIII. Physical Achievement Test Scoring Table

Points	75-Yard Dash		Triple jump nearest 6"	5-Second rope climb nearest 6"	150-yard man carry nearest $\frac{1}{2}$ sec.	One mile run nearest sec.
	(Nearest 1/5	Nearest 1/10				
100	8 0/0	8.0	26' 6"	20' 0"	30.0	5:00- 5:06
99						
98		8.1		19' 6"	30.5	5:07- 5:12
97			26' 0"		31.0	
96						
95	8 1/5	8.2		19' 0"	31.5	5:13- 5:18
94						
93			25' 6"	18' 6"	32.0	5:19- 5:24
92		8.3			32.5	
91						
90			25' 0"		33.0	5:25- 5:30
89	8 2/5	8.4			33.5	
88						
87		8.5	26' 6"	17' 6"	34.0	5:31- 5:36
86						
85						
84						

EXCELLENT

83	8%	8.6		17' 0"	34.5	5:37- 5:42
82						
81		8.7	24' 0"	16' 6"	35.0	5:43- 5:48
80						
79						
78		8.8	23' 6"	16' 0"	35.5	5:49- 5:54
77	8%					
76					36.0	5:55- 6:00
75						
EXCELLENT						
74		8.9	23' 0"	15' 6"	36.5	6:01- 6:06
73						
72		9.0			37.0	6:07- 6:12
71	9 ⁰ / ₁₀					
70			22' 6"	15' 0"	37.5	6:13- 6:18
69		9.1				
68					38.0	6:19- 6:24
67		9.2	22' 0"		38.5	
66	9 ¹ / ₁₀				39.0	6:25- 6:30
65		9.3			39.5	
64				14' 6"	40.0	6:31- 6:36
63		9.4			40.5	
62	9%				41.0	6:37- 6:42
GOOD						

Table XXIII. Physical Achievement Test Scoring Table—Continued

Points	75-Yard Dash		Triple jump nearest 6"	5-Second rope climb nearest 6"	150-yard man carry nearest $\frac{1}{2}$ sec.	One mile run nearest sec.
	Nearest $\frac{1}{5}$	Nearest $\frac{1}{10}$				
61			21' 6"		41.5	
60		9.5		14' 0"	42.0	6:43- 6:48
59					42.5	
58	9%	9.6			43.0	6:49- 6:54
57			21' 0"		43.5	
56		9.7		13' 6"	44.0	6:55- 7:00
55					44.5	
54	9%	9.8			45.0	7:01- 7:06
53			20' 6"	13' 0"	45.5	7:07- 7:12
52		9.9			46.0	7:13- 7:18
51					46.5	7:19- 7:24
AVERAGE 50	10 _{0/0}	10.0	20' 0"	12' 6"	47.0	7:25- 7:30
49					47.5	7:31- 7:36
48		10.1			48.0	7:37- 7:42
47					48.5	7:43- 7:48
46	10 $\frac{1}{2}$ %	10.2	19' 6"	12' 0"	49.0	7:49- 7:54
P O O R						
G O O D						

Table XXIII. Physical Achievement Test Scoring Table—Continued

Points	75-Yard Dash		Triple jump nearest 6"	5-Second rope climb nearest 6"	150-yard man carry nearest ½ sec.	One mile run nearest sec.
	Nearest 1/5	Nearest 1/10				
24	11¼	11.8	16' 0"		60.0	9:55-10:00
23		11.9		9' 0"	60.5	
22	120/0	12.0			61.0	10:01-10:06
21		12.1			61.5	
20	121½	12.2	15' 6"		62.0-62.5	10:07-10:12
19		12.3			63.0-63.5	
18	122½	12.4		8' 6"	64.0-64.5	10:13-10:18
17	122¾	12.5	15' 0"		65.0-65.5	
16	123½	12.6			66.0-66.5	10:19-10:24
15		12.7		8' 0"	67.0-67.5	
14	124½	12.8	14' 6"		68.0-68.5	10:25-10:30
13		12.9			69.0-69.5	
12	130/0	13.0			70.0-70.5	10:31-10:36
11		13.1	14' 0"	7' 6"	71.0-71.5	
10	131½	13.2			72.0-72.5	10:37-10:42
9		13.3			73.0-73.5	

VERY POOR

VERY POOR	8	13%	13.4	13' 6"			74.0-74.5	10:43-10:48
	7		13.5				75.0-75.5	
	6	13%	13.6		7' 0"		76.0-76.5	10:49-10:54
	5		13.7	13' 0"			77.0-77.5	
	4	13%	13.8				78.0-78.5	10:55-11:00
	3		13.9				79.0-79.5	
	2	140/0	14.0	12' 6"	6' 6"		80.0-80.5	11:01-11:06
	1		14.1				81.0-81.5	

APPENDIX

REFERENCES

AR 600-160	Maintenance of Physical Fitness and Detecting and Correcting Physical Abnormalities Among Officers
SR 320-5-1	Dictionary of United States Army Terms
AR 320-50	Authorized Abbreviations
FM 21-5	Military Training
FM 21-6	Techniques of Military Instruction
FM 21-22	Survival at Sea
FM 21-30	Military Symbols
TM 21-200	Physical Conditioning
TM 21-225	The Army Sports Program
DA Pam 108-1	Index of Army Motion Pictures, Filmstrips, Slides and Phonorecordings
DA Pam 310-3	Index of Training Publications
DA Pam 310-5	Index of Graphic Training Aids and Devices
ATP 21-113	Army Training Program for Personnel Aboard Ship and En Route to Overseas Stations
ATP 21-114	Basic Combat Training Program For Male Personnel Without Prior Service

ATP 21-186

Military Training Program (4 Weeks) For Transient Enlisted Men and Women at Personnel Centers, Ports of Embarkation, Continental United States

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[AG 353 (2 Aug 57)]

By Order of *Wilber M. Brucker*, Secretary
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Official: *Chief of Staff.*

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Armies	PMST Sr Div Unit
Corps	PMST Jr Div Unit
Div	PMST Mil Sch Div Unit
Brig	Port of Emb (OS)
bg	PG
Bn	db
Co	Mil Dist
USA Tng Cen	

NG: State AG; units—same as Active Army.

USAR: Same as Active Army.

For explanation of abbreviations used, see AR 320-50.